

The North Central Association Quarterly

CONTENTS FOR SEPTEMBER, 1930

VOL. V—NO. 2

	Page
Association Notes.....C. O. Davis	177
Our Frontispiece—Proceedings of the Association—Appreciations—A Regretful Error—Faculty Record Blanks—President Morgan's Address—School Experimentation—Teaching Units in Physics—Newly Accredited Secondary Schools.	
Facsimile of the N. C. A. Faculty Record Blank.....	181
Report on North Central Study for 1928-29 (College Freshmen).....C. R. Maxwell, Chairman	189
Report of the Committee on Financial Standards for Catholic Institutions.....H. M. Wriston, Chairman	191
Some Experimentation in the Joliet, Illinois, Township High School and Junior College.....W. W. Haggard	193
The Joliet Junior College Experiment (A Committee Report).....H. C. Morrison, Chairman	195
Report on Stephens College Experiment (A Committee Report).....C. H. Judd, Chairman	196
Report on the Reorganization of the Senior High School and Junior College of Kansas City, Missouri (A Committee Report).....C. H. Judd, Chairman	197
Progress Report of the Committee on Library Standards for Higher Institutions.....Douglas Waples, Chairman	199
College Entrance Requirements in English (A Committee Report).....E. L. Miller, Chairman	209
The National Survey of Secondary Education.....L. V. Koos	219
Teacher Training Institutions and the North Central Association of Colleges and Secondary Schools.....W. P. Morgan	225
Differentiated Principles and Assumptions Pertaining to the Content of Curricula Offered in Secondary Education.....J. A. Clement	239
College and School Athletics.....H. J. Savage	249
Progress Report on the Development of Teaching Units in High School Physics (A Committee Report).....A. W. Hurd, Chairman	257
Proceedings of the Association—Thursday Afternoon Session, March 20	294
Convention Roll Call.....	303



Chauncey S. Boucher
Vice Chairman
Commission on Higher Institutions



Thomas W. Gosling
Member Ex Committee



L. W. McWhorter
CHAIRMAN
Commission on Secondary Schools



James M. Wood
Member Ex Committee



W. E. Tower
Member Ex Committee

THE North Central Association QUARTERLY

Volume V

SEPTEMBER, 1930

Number 2

Association Notes

OUR FRONTISPIECE

In this issue of the Quarterly the likenesses of five more of the officers of the Association are presented. These are C. S. Boucher, Vice Chairman, Commission on Higher Education; L. N. McWhorter, Chairman, Commission on Secondary Schools; J. M. Wood, T. W. Gosling, and W. E. Tower, members of the Executive Committee.

PROCEEDINGS OF THE ASSOCIATION

By vote of the Editorial Board, "carefully edited" official minutes of the general meetings of the Association are to be published from time to time in the Quarterly. Conforming to this policy, this issue carries the report of the first or Thursday afternoon session for 1930.

APPRECIATIONS

It is always agreeable to know that the Quarterly is meeting the hopes and expectations of its friends. The following are two excerpts from letters received in the Editorial Office recently:

Purdue University
Lafayette, Indiana
President's Office
June 17, 1930.

My dear Davis:

I have just spent an hour or more

with the June number of the North Central Association Quarterly. This is such an illuminating publication that I feel that you are entitled to the appreciation of all members of the Association for the success of this project. When the Quarterly was first established I was somewhat doubtful as to the possibilities of its success. . . . however it has proved to be a distinctive influence in the power of the Association.

Very sincerely yours,
(signed) Edward C. Elliott

Another

State of Illinois,
Office of the Superintendent of
Public Instruction
Springfield,
June 25, 1930.

Dear Professor Davis:

I have just received the June number of the North Central Quarterly and, as always, it is interesting and has a vast amount of material in it which will be of value for reference.

Sincerely yours,
John Calvin Hanna.

A REGRETFUL ERROR

Through error, the name of Iowa State College of Agriculture and Mechanic Arts, Ames, Iowa was omitted from the list of accredited colleges and universities as printed in the June issue of the Quarterly. This institution has been continuously accredited since 1916.

FACULTY RECORD BLANKS

The June issue of the Quarterly contained a Report of the Committee on Professional Training of College Teachers. In this Report announcement was made of a proposed Faculty Record Blank which was being completed and which, it was hoped, would be used by all accredited institutions of higher education. That blank has now been perfected and printed. A *facsimile* of it appears in this issue of the Quarterly.

These official Record Blanks have been printed in two styles: one on bond paper, the other on cardboard. They have been assembled in packages of 50 forms each, and sell postpaid as follows:

- | | |
|----------------------------------------------|--------|
| A. <i>Paper.</i> One package of 50 Forms | \$1.50 |
| Each additional package of 50 Forms | \$1.00 |
| B. <i>Cardboard.</i> One package of 50 Forms | \$2.00 |
| Each additional package of 50 Forms | \$1.50 |

Already orders have been received for more than 19,000 copies of the blanks.

Schools and colleges desiring to secure these Record Forms should address their letters (enclosing check or money order) to

The North Central Association Quarterly, Room 4012 U. H. S. Bldg., Ann Arbor, Michigan.

PRESIDENT MORGAN'S ADDRESS

In this issue of the Quarterly will be found Mr. W. P. Morgan's presidential address. It is a clear and most interesting resume of the normal school situation in respect to North Central Association relationships. "These institutions," says Mr. Morgan in reviewing their history within the Association, "started out without any classification. Gradually they grew to be considered as secondary institutions. For a short time they were put on a list by themselves. Then some of them began to do work of a strictly college type but

were included with a general list of secondary schools, colleges and teacher training institutions. Then the teacher training institutions began to show definite tendencies toward a four year college organization and a two year college organization, and the question began to be raised as to the classification of these institutions within their own list, and this in turn resulted in a request that those who could meet the college standards be transferred to the college list and that the other list be discontinued."

Mr. Morgan's plea is that teacher training institutions shall now be recognized as on a parity with liberal arts colleges and shall be given all the rights and privileges which those institutions enjoy.

SCHOOL EXPERIMENTATION

Dr. Wilbur, in his address before the Association in March, sounded a warning against over-standardization. Other speakers have done likewise on previous occasions. It is interesting to note, however, that the Association has to some extent anticipated these speakers and, in very practical ways, has made provision for administering its standards in a notably flexible manner. In particular the exercise of the freedom allowed to the school authorities in Joliet, Kansas City and Columbia in deviating from fixed North Central standards will be watched with especial interest. The Official reports of the first year's experiments in these three centers are given in this issue of the Quarterly. They read most encouragingly.

TEACHING UNITS IN PHYSICS

In the March, 1929, Quarterly the *Committee on Teaching Units in High School Physics* outlined five units of work in the subject. In the September, 1929, Quarterly, Dr. Hurd elaborated on the former report and presented other pertinent material relating to the entire question of the Re-organization of Physics. In the current issue of the

Quarterly, (September 1930) the Committee under the chairmanship of Dr. Hurd presents a third installment of the report. This includes an outline of 14 additional units and completes the plan as originally conceived.

The earlier preliminary report and the outlines of Units I to V inclusive are available at \$.10 per copy. Reprints of the last report (containing the outlines for units VI to XIX inclusive) can be had for \$.20 per copy. Orders containing remittances should be sent to C. O. Davis, Editor N. C. A. Quarterly, Room 4012 UHS, University of Michigan, Ann Arbor, Michigan.

The Committee trusts that there will be a large sale of these reprints and that reports and constructive criticisms respecting the use of the units will be received from high school teachers throughout the North Central territory.

NEWLY ACCREDITED SECOND-ARY SCHOOLS

The following new schools were accredited by the North Central Association at the annual meeting in March, 1930. These schools, of course, appear in the complete list published in the June Quarterly. They are reprinted here merely to give distinction to them.

Arizona—
Superior

Arkansas—
Gurdon
Marion
Mena
Osceola
Parkin
Prescott
Rector
Stamps

Colorado—None

Illinois—
Arlington Heights
Belleville
Bloomington: Trinity
Chicago: DePaul Univ. Loop H. S.
Holy Trinity
Peoria: Spalding Inst.
Pittsfield

Plano Community
Wilmette: Mallinckrodt

Indiana—

Butler: City H. S.
East Chicago: Roosevelt
Gary: Horace Mann

Iowa—

Belmond
Cedar Rapids: Mount Mercy
Gowrie
Iowa City: University
Milford
Orange City: Northwestern Classical Acad.
Osceola
Rockwell

Kansas—

Almena
Atwood
Clyde
Hamilton
Hope
Kansas City: Pembroke School
Leavenworth: Immaculata
Oxford: Rural
Partridge
Sedgwick
Tonganoxie: Rural
Valley Falls

Michigan—

Bellevue
Clare
Flat Rock
Frankfort
Grand Rapids: Lee
Lake Orion
Rogers
Romeo
Vassar

Minnesota—

Austin: St. Augustine
Brainerd: Washington
Calcedonia: Catholic Central
Crookston: Mt. St. Benedict

Missouri—

Bonne Terre
Caruthersville
Desloge
Morrisonville: Con. H. S.
St. Louis: Rosati-Kain
Troy

Montana—

Harlem

Scobey
 Whitehall
Nebraska—
 Gibbon
 Franklin
 Hemingford
 Hooper
 Orleans
 Tilden
New Mexico—
 Anthony: Union
 Farmington
 Hatch
North Dakota—
 Carrington
Ohio—
 Arlington
 Columbus: Y. M. C. A. Day School
 Dayton: Roosevelt
 Lakewood: St. Augustine
 New Straitsville
 Parma
 Rittman
 Shreve
 South Euclid: Charles Brush
 Toledo: Whitmer H. S.
 Vermillion

Wellston
 Youngstown: Boardman
 Johnstown
Oklahoma—
 Hennessey
 Tahlequah
 Tonkawa Prep.
South Dakota—
 Arlington
 Faith
West Virginia—
 Burnsville: Salt
 Lick Dist.
 Charleston: Garnet
 Farmington
 Logan
 Man: Tridelpia Dist.
 Masontown: Valley Dist.
 Stotesbury: Mark Twain
 Williamstown
Wisconsin—
 Mayville
 Milton
 Milwaukee: Univ. H. S.
 Park Falls
Wyoming—
 Cody

FACULTY RECORD

I. PERSONAL INFORMATION

Name (in full) _____ Date _____

College or Division _____ Department _____

Local address _____ Permanent address _____

Place of birth _____ Date of birth _____ Age _____ Married or single _____ Widow or widower _____

Separated or divorced _____ Children (No.) _____ Nationality _____ American Citizen _____

Church Affiliation or Preference _____

Travel _____

III. EDUCATION

[illegible]

IV. EVIDENCES OF SCHOLARSHIP—Continued

A. Publications

[illegible]

B. Research achievements not covered in "Publications" -

C. Membership in Learned Societies and Professional Organizations

[illegible]

Report on North Central Study for 1928-1929*

By C. R. MAXWELL

DEAN, COLLEGE OF EDUCATION, UNIVERSITY OF WYOMING

The report on the Special Study for 1928-1929 on freshman failures has been printed and appears in the North Central Association Quarterly for March. The Quarterly was distributed several weeks ago; consequently, all members have had an opportunity to read the report. I shall take only a few minutes to call attention to a few salient aspects. The co-operation from both secondary schools and higher institutions was excellent. It will be noted in the report that only 93 secondary schools failed to furnish the list of graduates that entered college. In several instances colleges reported students from these secondary schools in attendance and in such cases the schools are listed in Table II even though the data are incomplete. In most cases the higher institutions from which data were not received represented institutions outside North Central territory where only a small number of students was enrolled. By comparing the list of higher institutions whose names are given in Table X with the list of accredited institutions for the year 1928-1929 it will be seen that only 19 are missing. Reports were received from several of this number, but too late to be included in the study.

Before continuing this discussion further, I wish to emphasize the danger of anyone drawing unwarranted conclusions from the data presented in Table II. For example, in some instances, data are incomplete for schools. It would be manifestly unfair to criticize a particular school for the large percentage of Freshman failures which may appear, when reports may have been received for only 50% of the graduates. The study is, however, accurate in show-

ing the percentage of failures by States and by the group of schools as a whole, as reports were secured on over 90% of the June graduates of 1928 actually enrolled in the higher institutions the following year.

[I might say that an error exists in Table X, Statistics from N. C. A. Higher Institutions. I cannot account for the omission of Purdue University in the list of state universities and state colleges, but it was included in the other list.]

Owing to the limits of space in the preparation of Table II, it was impossible to include the percentage of semester hours failed by subjects. This might be a significant index of the efficiency of a secondary school in its preparation of students for college, but any school will be able to find this information with little effort and will also be able to compare the failures in each subject with the general average, which appears in Table II, in each state summary and finally in a total summary. Figure 1, which gives a graphic representation of the percentage of total semester hours failed by subjects, raises interesting questions which, because of the nature of this study, cannot be answered. One may wonder why the percentage of failures in mathematics is more than twice as great as the failures in English, and again why should the failures in Spanish be approximately 50 per cent greater than those in French. Does it mean that the college teachers in the subjects in which failures are highest have a more rigid standard of work? Or does it mean that the teachers of these subjects in secondary schools are less well prepared for their work? Or may it mean that the secondary schools have a better conception of what is required in the subjects in which the failures are

*Made before the general Association at its meeting in Chicago March 20, 1930.—The Editor.

least? Or does it represent a different type of attraction of students by subjects? Each one of us may have his own opinion as to which factor is most responsible. It presents a problem worthy of much additional study. In comparing some items in this report with the 1929 report of the Southern Association, there is a like condition existing in the Southern States.

[You will find a comparison of those data in Table IX on Page 577.]

A scrutiny of Table VI, a Comparison of Percentages of June Graduates Entering Higher Institutions in September in 1924 and 1928, shows there has been a slight decrease in the four-year period in the percentage of June graduates entering higher institutions in September. From this table one might be led to infer that with an increase in the number of graduates from the secondary schools a decrease occurs in the number entering college. However, this might be a fallacious conclusion because we do not have any data on deferred entrants. It might mean merely that a larger percentage of graduates of secondary schools in 1928 postponed college entrance to a greater degree than did the graduates of June, 1924. The failures in different types of higher institutions present the same picture as the 1924 study. The greatest percentage of failures is in the state universities and state colleges; and the smallest in teacher training institutions. The failures in endowed colleges and universities and in junior colleges come in between these two groups. The interpretation of this situation will again depend upon one's point of view. From the standpoint of the Commission on Higher Institutions it is deserving of a thoroughly scientific study. A comparison of institutions in the same category presents wide discrepancies. Tables XVII, XVIII, and XIX furnish much food for thought. One cannot help but wonder why in two institutions of the same type which report on exactly the same number of students one had no freshman failures while in the other one

freshmen failed over one-fifth of the total number of hours for which they were registered. To be successful academically, apparently a freshman should pick his college as well as his prof. Might it not be advisable to make an investigation to find what is the threshold of ability required for success in different colleges? A rating of our higher institutions on such a basis would solve many of the problems now confronting harassed parents of prospective college freshmen. The pioneer who will have the temerity to embark upon such an investigation will be assured of being crowned with both thorns and laurels — or perhaps simply crowned.

To the writer the third section of the investigation presents the most optimistic aspect. It shows that our higher institutions are cognizant of the necessity of the need to orient freshmen to a greater degree than has existed in the past. The newer means that have been introduced by institutions such as Freshman Week, establishment of Personnel Departments, utilization of tests, sectioning of classes on the basis of ability and aptitude are all in the stage of experimentation. We have little or no scientific evidence of the effectiveness of these measures. The institutions that are employing these means still appear to have as high a percentage of failure as do those that are still traveling conventional paths. It means, however, that our higher institutions are now conscious that a problem exists. Such a state of mind has been responsible for the inception and development of our present scientific movement, not only in education, but in other fields of social endeavor. The enigma of proper freshman adjustment is continually with us. Whether the solution means more rigid selection of students for entrance into our higher institutions; whether it means more careful direction after students have been admitted; or whether it means the organization of different types of institutions to meet varying aptitudes, abilities, and needs, the future only can tell.

Report of the Committee on Financial Standards for Catholic Institutions*

To the Commission on Institutions of Higher Education

In 1928 the secretary of the Commission on Institutions of Higher Education recommended that a special committee be appointed to consider and report upon the basis for accepting the contributed services of members of faculties in lieu of the endowment and income requirements of Standard 12.

The committee appointed consisted of President R. M. Hughes, chairman, the Reverend William F. Cunningham, C. S. C., and the Reverend Alphonse M. Schwitalla, S. J. This committee submitted its report at the last annual meeting of this commission. Its final recommendation was:

(a) That the present committee be continued for another year;

(b) That during this period and on the basis of the present report, the committee make an intensive study of at least five institutions in the North Central area, the types of institutions to be as follows:

1. A University under Catholic control with fully organized and large departmental personnel;
2. A College for men of from 100 to 200 students under the control of a religious order of men;
3. A College for men of from 100 to 200 students under the control of the Secular Clergy;
4. A large college for women of over 200 students under the control of a religious order of women;
5. A smaller college for women of from 100 to 200 students under

the control of a religious order of women.

(c) That this Committee report its conclusions based on such a study to the North Central Association a year from the acceptance of the present report.

(d) That final action on this matter be taken at the meeting of 1930 to become effective at the beginning of the School session in 1931.

President Hughes found it impossible to continue in the chairmanship of this committee, and President Henry M. Wriston was substituted in his place. The committee held three meetings, the first at the North Shore Hotel in Evanston, Illinois on November 16, 1929, the second on January 26, 1930 at the Hotel La Salle, Chicago, and the third on Tuesday, March 18, 1930 at the Stevens Hotel, Chicago.

The procedure suggested last year was followed without deviation, and five institutions were selected in accordance with the proposal. The result was the discovery that once the principle of accepting the capitalized value of contributed services toward meeting the requirements of Standard Twelve is adopted, no Catholic institution which meets the other standards can possibly fail to meet the financial standard relating to endowment. If one would take, for example, the minimal case of a college with a president and eight departments, and adopt the technique outlined by the committee a year ago, it would result in the equivalent of an income of over \$30,000 exclusive of student fees, which would presumably be not less than \$20,000, and the equivalent of an endowment of over \$500,000. In the application of this method to a small college for women with no endowment at all,

*This report was made to the Commission on Higher Institutions at the time of the Annual Meeting in Chicago, March 19, 1930.—The Editor.

the figures resulted in the equivalent of \$787,500 endowment.

It is the unanimous recommendation of the committee that the commission adopt the practice of the Association of American Universities, "Services of Members of the Faculty contributed through permanent organizations for the support of educational programs may be capitalized in satisfaction of the requirement for endowment" upon the basis proposed by this committee last year. In making this calculation, however, the net cost of non-contributed faculty services shall be deducted from the net value of the contributed services, and the balance only shall be capitalized toward the satisfaction of the endowment requirement. It is further to be understood that if there is a debit there must be sufficient endowment to offset it, in addition to the above requirement.

So far as income is concerned, the difference between the net value of contributed faculty services and the net cost of the non-contributed faculty services, supplemented by student fees and other acceptable income, must be equal to the requirements of Standard 12.

We recommend that these requirements become effective in March, 1932.

This committee had further assigned to it the duty of "attempting to set up equivalents for training received by the members of the various Catholic orders."

The committee had before it a summary of the training of the secular clergy, of the Benedictines, the Jesuits, the Marianists, the Vincentians, and the Fathers of the Holy Cross.

There was sufficient similarity in the training of the several groups to permit the committee to deal with them all on a uniform basis, thereby avoiding recommending a procedure which would be too complicated for any practical use.

The committee, therefore, unanimously recommends that the complete training given by the several orders of men and by the seminaries of the secular clergy be accepted for the purposes stated in Standard 5, Faculty Training, as including:

1. Training equivalent to the Bachelor's degree.
2. In Latin and History, training equivalent to the Master's degree.
3. In Philosophy, training equivalent to the Master's degree and one additional year of graduate study.
4. In Religion, Religious Education, and Ethics, training equivalent to the Ph. D. Degree.

We recommend that these equivalents be put in effect immediately.

(Signed)

Henry M. Wriston
Wm. F. Cunningham, C. S. C.
Alphonse M. Schwitalla, S. J.

Some Experimentation in the Joliet, Illinois, Township High School and Junior College*

By W. W. HAGGARD
SUPERINTENDENT OF SCHOOLS

The North Central Association of Colleges and Secondary Schools in March, 1928, granted the Joliet Township High School and Junior College permission to conduct some experiments in the field of the secondary school curriculum. The following is the statement of the application as submitted by Dr. Lewis W. Smith, then superintendent of the institution:

"Application is hereby made to the North Central Association of Colleges and Secondary Schools on behalf of the Joliet Township High School and Junior College that the latter institution, with no loss of accredited standing, be given authority to conduct educational experiments in the field of the secondary school curriculum and in the field of student achievements. It is understood that the technical standards having to do with units and hours of credit, may be disregarded, but that academic achievement represented by such units and hours of credit will, in all respects, be maintained.

"It is further understood that all experimentation conducted in the Joliet Township High School and Junior College will be conducted under the supervision of a committee of the educators to be appointed by the Chairman of the Commission on Higher Education of the North Central Association of Colleges and Secondary Schools."

A supervising committee consisting of Professor H. C. Morrison of the University of Chicago, Chairman; Dean C. E. Chadsey, School of Education, University of Illinois; and Dean J. T. Stout, School of Education, Northwestern University, was appointed by Chairman H. M. Gage of the Commission on Institutions of Higher Education. Two mem-

bers of the committee, Professor Morrison and Dean Chadsey, visited Joliet in January of this year.

One of the immediate purposes of our experiment is to remove, if possible, duplication found in the high school and college courses in the various fields of knowledge. The department that has done the most complete piece of work to date is chemistry. Mr. R. L. Frisbie, head of the chemistry department for some time, has been gathering objective data to show that the considerable duplication between high school chemistry and the first year of college chemistry can be removed. The procedure has involved the offering of freshman general chemistry to both high school seniors and college freshmen. This course is of college grade both in content and method.

The University of Iowa Standardized Test in general chemistry has been used to measure the product both in the 12th and in the 13th year, but the data we are concerned with just now apply only to the 12th year. It is reported by Dr. G. W. Stoddard in the issue of the *Journal of Chemical Education* for January, 1929, that this test was given to 474 freshmen completing general chemistry at the three institutions indicated in the following table.

Dr. G. W. Stoddard of the University of Iowa, one of the co-authors of this test recently submitted in writing to the head of our chemistry department this statement. "Recently we have had occasion to differentiate between students who took these examinations after a year of freshman chemistry. The high school median was 67, the college median 82. The high school mean was 71, the college mean 83. I would think then that the average pupil may be considered to have achieved the equivalent of college general chemistry (to the extent

*A report made to the Commission on Secondary Schools in Chicago, March 20, 1930.

that it is measured by this test) when he attains a score of 83 or above."

The head of our chemistry department, Mr. Frisbie, admitted to his course in Qualitative Analysis those freshmen who had made scores of 100 or above on the Iowa test upon completion of high school chemistry. He admitted, also, for experimental purposes, a few students with scores ranging from 80 to 100. A rather comprehensive course in this subject was given, using Middleton's "Ex-

given college credit for chemistry, providing score of 83 is made on Iowa test. It is hoped that other institutions will do likewise. So far the head of the chemistry department of one of the large state universities has officially agreed to grant college credit in chemistry to the students from the Joliet Township High School entering with 15 Carnegie units, exclusive of the year of chemistry.

The method of eliminating duplica-

UNIVERSITY OF IOWA STANDARDIZED TEST IN GENERAL CHEMISTRY RESULTS

	No. of Students	Range of Scores	Median Score	Score of 90 or above	
Dr. G. W. Stoddard, 1928	474 ¹	—	82 ³	38.6%	—
J. T. H. S., June, 1928	76 ²	33-155	86.5	47.4%	Only 6 scored less than 60
J. T. H. S., June, 1929	105 ²	46-160	95	60 %	Only 4 scored less than 60

¹College freshmen: Purdue, Illinois, Oklahoma A. & M.

²High school seniors: Joliet Township High School.

³The maximum score on this test is 188.

ercises in General Chemistry," involving the application of the principles of chemical equilibrium, and was followed with Engelder's "Qualitative Analysis," using Smith's "Inorganic Chemistry" as a required chemistry text. The results at the end of the first semester showed that of the pupils who had made scores of 100 or above on the Iowa test, all but one had done quite satisfactory work, while of those who scored less than 100, only 2 had secured a passing grade, and one of these was very low. On the basis of these results, we begin to feel confident that a large part of our high school seniors did a college grade of general chemistry work.

Mr. Frisbie reports that several pupils who scored less than 80 desired to continue the study of chemistry and that he required this group to take another semester of general chemistry and tested them again upon completion. The low score was 103. It took this group three semesters to reach the same attainment in general chemistry which a large proportion of the class acquired in two semesters.

Graduates of the Joliet Township High School entering the Joliet Junior College with 15 Carnegie units of credit, exclusive of the year of Chemistry, are

tions in other fields of subject matter is suggested by the procedure followed in our chemistry department. It is anticipated that a year of American history will be organized on a similar basis, which should entitle the student to a certain number of American history credits in college, providing the specified number of entrance units exclusive of American history are submitted. That is, we expect to organize an American history course that may be taken either in the 12th year or the 13th year. The question of American history is particularly important because a few years ago the Joliet Junior College removed American history from its offerings because it was so similar to the American history offered in the 12th year of the high school. Trigonometry offers also a field for some experimentation. There is no valid reason why a student should take trigonometry both in the high school and in the college. English, the foreign languages, as well as American history and mathematics, are being studied by committees of the faculty. Out of the elimination of various curricular duplication, it is expected that the brighter students, to say the least, may be able to save considerable time in their secondary careers.

The Joliet Junior College Experiment*

(A Committee Report)

To the President of the North Central Association

Dear Sir:

We file herewith a brief report of our first visit in connection with the oversight of the development of the high school and junior college at Joliet, Illinois, in conformity with the spirit of standards in the North Central Association.

Messrs. Chadsey and Morrison of the committee visited Joliet on January 3rd, and spent the day in the school. They met the superintendent and the administrative officers. They also called into consultation several of the teachers who are at present particularly concerned. This report deals particularly with courses in chemistry in the high school and junior college as typical of economies in the program of study which it is thought can be brought about.

It is found that the training of the teaching staff is adequate, since every teacher conducting academic courses in the junior college or equivalent courses in the high school holds the master's degree from a reputable university, that all of them possess considerable previous experience, in general, fully as much experience in teaching the specific material which they are using as have university teachers at freshman and sophomore level.

The teaching load was found to be systematically in keeping with the North Central Association standards.

The Department of Chemistry in the school has collected convincing factual material, tending to show that twelfth-year chemistry students compare favorably with the general tendencies of university freshmen as revealed by the standardized tests of the University of Iowa.

The committee finds that there is no characteristic difference between the chemistry taught at twelfth-year level and the chemistry taught in the local junior college.

It is understood that students desiring to enter universities submit the number of Carnegie units required for admission. The present recommendation is that whenever individuals submit the specific requirement in Carnegie units set up by a given university with a full unit in chemistry in addition, they may receive university credit for the chemistry taught at twelfth-grade level, to be counted as credit toward the bachelor's degree, and as accredited chemistry, *pari passu* with university freshman credit in equivalent courses.

It was found that since the students in college physics in the Joliet Junior College are all engineering students there is little if any program duplication in physics as between the local high school offering and that of the local junior college, as there is such duplication in chemistry. On the other hand, the committee suggests that the school may very well develop academic courses in physics similar to those now offered in chemistry which are not necessarily pre-engineering in type. Whenever such a twelfth-grade course in physics is made the full equivalent of university freshman courses in physics then the same principles should apply as those which the committee has described in the case of chemistry.

The committee further suggested, on the occasion of its visit, that the possibilities of eliminating duplications in American History, mathematics, foreign language and English should be given due consideration and that an effort should be made to make such courses at twelfth-grade level bear the same relation to university freshman courses as is now the case with chemistry. The

*This report was given before the Commission on Institutions of Higher Education, in Chicago, March 20, 1930.—The Editor.

school has this matter under consideration and the proper committees have been appointed to consider the matter.

Finally, the committee wishes to make it very plain that these particular twelfth-grade courses, whether in chemistry or in other subjects, are conceived to be of the same academic standing as similar courses offered at the local junior college level and customarily offered at university freshman level. The high school may offer other courses in any of the departments concerned, credit in which can be utilized to absorb university admission requirement but cannot be submitted for advanced credit. The essence of this report is that the

specific courses in question at twelfth-grade level are the full equivalent in character and content of corresponding courses offered either in the local junior college or commonly at university freshman level, that they may be taken without prejudice by qualified pupils at either twelfth-grade level or junior college level, and that such courses and no others may be accepted by universities for advanced credit.

(Signed)

C. E. Chadsey
J. E. Stout
H. C. Morrison
Committee.

Report on Stephens College Experiment*

(A Committee Report)

At the session of the North Central Association in 1927, President Wood of Stephens College presented on behalf of that institution a request that the Association permit Stephens College to experiment with the plan of adding two high-school years to the existing two junior-college years which had been maintained by the college in the past. President Wood stated that it seemed desirable that the college include more than two years in order that half of the student body should not be withdrawn each year through graduation. He also promised that the college would carry on a vigorous study of the possibility of reconstructing the curriculum administered during the whole four years.

The Association voted to permit Stephens College to carry on the experiment for five years and appointed a committee to keep in contact with the experiment.

The full text of the resolution is as follows:

"Voted that Stephens College be permitted to carry on an educational

experiment for a period of five years involving the downward extension of the junior college into the fields of junior and senior high school education and contemplating the obliteration of the lines of demarkation now existing between the last year of the usual four year high school and the first year of the junior college; provided that in order to assure the maintenance of proper junior college standards the President of Stephens College be required to report annually on the progress of the experiment to a committee of three persons appointed by the Chairman of the Commission."

The committee appointed by the Association visited Stephens College two years ago at the inception of the experiment. A second visit by the committee took place on February 11, 1930. A written report of progress has also been filed with the committee.

The committee finds that the registration in the two high school years of the college is small, including only between 30 to 40 students. Only very small numbers of these students continue into the third and fourth years of the experimental plan. The outlook for a sub-

*Given before the Commission on Institutions of Higher Education, in Chicago, March 20, 1930.—The Editor.

stantial increase in this registration does not seem to be promising.

The committee finds that the experimental work in preparing curriculum materials for the high-school years, especially in the form of orientation courses in four lines, is being carried on with energy. The four orientation courses are as follows: (1) vocations, (2) natural science, (3) social science, and (4) arts and aesthetics.

The members of the committee attended classes in each of these lines and held conferences with the staff. It is the judgment of the committee that Stephens College is fulfilling its pledge to devote energy to the very useful experiment of organizing such courses.

The committee did not attempt to observe the other experiments in curriculum reconstruction which are being carried on at Stephens College. Reports on the work in the upper classes were made to the committee during its visit and these reports indicate that much time and attention is being given to promising curriculum studies.

One important phase of the experiment which deals with the high school years is a plan of co-operation which is participated in by Stephens College, and the public junior college at Long Beach, California, and a private school for boys at Menlo Park, California. The materials prepared at Stephens College for the four orientation courses are being used at the two California institutions

and may be used during the next school year by other junior colleges in California. In order to facilitate the initiation of the experimental work in California, an exchange of teachers was arranged and is now in operation between the junior college of Long Beach and Stephens College.

The co-operation between Stephens College and the California institutions was arranged by President Wood and is an important supplement to the work being done at Stephens College.

In connection with all of the experimental work a program of testing is being carried on which should furnish definite objective evidence of the success of the undertaking.

The committee begs leave to report on the basis of its observations that Stephens College is complying with all of the stipulations which it made when it asked for permission to try the experiment. Under the vote of the Association permission continues for two years more. The committee offers no judgment at this time as to the probable final success of the enterprise. It records a favorable judgment of the vigor and devotion with which Stephens College is contributing to the solution of one of the important problems of junior-college organization.

(Signed) Respectfully submitted,

George F. Zook

L. V. Koos

Charles H. Judd, Chairman.

Report on the Reorganization of the Senior High School and Junior College of Kansas City, Missouri*

(A Committee Report)

At the meeting of the North Central Association in 1929, Superintendent Melcher of the school system of Kansas City, Missouri, asked for approval of

*Given before the Commission on Institutions of Higher Education, in Chicago, March 20, 1930.—The Editor.

an experiment which was projected for that system. The purpose of this experiment is to bring about a closer articulation between the senior high school and the junior college and to effect, if possible, such an economy in the time required for graduation from the junior

college that the total number of years required for the completion of elementary and secondary education through junior college shall be twelve years instead of the conventional fourteen years.

The full text of the resolution authorizing this experiment is as follows:

"Voted that the Junior College of Kansas City, Missouri, with no loss of accredited standing, be given authority to conduct educational experiments embracing the relationship between the secondary school and junior college curricula. It is understood that the technical standards having to do with units and hours of credit may be disregarded but that academic achievements represented by such units and hours of credit will in all respects be maintained; provided that in order to assure the maintenance of proper junior college standards the Junior College of Kansas City shall be required to report annually on the progress of the experiment to a Committee to be appointed by the Chairman of the Commission on Institutions of Higher Education, which Committee shall report to the Commission."

The committee of the North Central Association which was charged with the responsibility of keeping in contact with the experiment visited Kansas City on February 10, 1930 and held a conference with Superintendent Melcher and some twenty-five of his associates who are working on the experiment.

Conditions are favorable at Kansas City for an experiment which has as one of its chief purposes economy of time because the elementary schools of that city have from the beginning been seven-year schools rather than eight-year schools. In recent years a number of junior high schools have been opened, and the system has for some time included a successful junior college.

The first step which has been taken in the experiment is the organization of three committees to study the curriculum in three subjects, namely, English, Social Studies, and Natural Science. These committees are made up of se-

lected teachers from the junior high schools, senior high schools, and the junior college. They have been holding weekly meetings since early in December. It is the purpose of Superintendent Melcher to organize soon two additional committees in subject-matter fields, one in mathematics, and one in foreign languages.

The reconstruction of the curriculum necessary to make the experiment a success will require more time and energy than can be contributed by the members of the committees while they are performing their full regular duties in the schools. It is the purpose of the Superintendent to release the chairmen and possibly other members of the committees for such time as may be necessary to carry on their work.

A general advisory committee is to be created for the co-ordination of the work of the committees on special subjects.

Provision will be made to check up on the work of pupils. The experiment will be begun gradually, probably in only one school at first.

The aim of the whole procedure will be to determine how far it is feasible to give average pupils a full elementary and secondary education in a school system which is organized on the 6-3-3 plan. The plan, as stated earlier, contemplates the inclusion of the junior college curriculum in this 6-3-3 organization. Pupils completing the work will be expected to enter the university at the level of the present junior year.

It is the judgment of this committee that the experiment is being seriously and deliberately undertaken and that the North Central Association may properly encourage its continuance. It is recommended that another visit to Kansas City be authorized, this visit to be made at some time during the next school year. It is also recommended that the Kansas City school system have the approval of this Association for the continuation of the experiment.

(Signed) Charles H. Judd
L. V. Koos
George F. Zook

Progress Report of the Committee on Library Standards, Commission on Higher Institutions*

By DOUGLAS WAPLES

PROFESSOR, GRADUATE LIBRARY SCHOOL, UNIVERSITY OF CHICAGO

The chairmanship of this committee has changed since the last report, following Mr. Works' acceptance of the presidency of an eastern college. The nature of the committee's task as he saw it and as approved by the commission is indicated by the following paragraph which is quoted from a statement prepared by him one year ago:

"In connection with this general statement of plans, it should be said that the officers of the N. C. A. do not expect anything like a complete report at the next annual meeting. They wish the committee not only to prepare a set of minimum standards, but also to make studies of college and university library service. As the committee will attempt to do both of these things, it is evident that the work of the committee will in all probability extend over a period of several years."

In this statement Mr. Works also mentions six functions of the college or university library, one or more of which a given library may assume. These are (1) to furnish materials needed to supplement the textbook, the lecture, and the laboratory in scheduled courses of instruction; (2) to develop the general reading interests of the student body; (3) to furnish materials which meet the study needs of the faculties and library staff; (4) to meet the needs of alumni and former students; (5) to meet the needs of extension students; and (6) to meet the individual research needs of faculty members. The last three of these probably do not apply to the junior colleges. The first three do apply.

Our committee considers it particularly important to study each of these three functions separately. Criteria useful in selecting books to serve one function do not apply well to other functions. Failure to distinguish the functions a given library should serve and to apply criteria appropriate to each function, we believe is largely responsible for the lack of satisfactory bases for the selection of college library collections.

Various developments have occurred since Mr. Works resigned which abundantly justify his recommendation that an intensive study of the major college library functions be undertaken at once and which also greatly reduce the labor involved.

The first of these is the work of G. W. Rosenlof, director of secondary education and teacher training for the state of Nebraska, whose recent study of teachers college libraries has led the American Association of Teachers Colleges to adopt a series of very definite recommendations. [These are attached to this report as Appendix A.]

A second event is the completion by Mr. Eugene Hilton, as his doctoral dissertation at the University of California, of lists of books selected and ranked by adequate and competent juries in each field for their merit as references collateral to each of 32 junior college courses. These lists are considered sufficiently valid to serve the immediate purposes of our committee in checking the collateral reference holdings of junior college libraries.

A third development is the availability of new data regarding the personnel, buildings, equipment, organization, and administration of small senior college libraries. These data are being assembled

*A report made before the Commission at the time of the annual meeting in Chicago, March 19, 1930.—The Editor.

by Professor W. M. Randall of the Graduate Library School, University of Chicago, in collaboration with Professor F. W. Reeves in his current survey of colleges supported by the Methodist denomination. These data, like Mr. Hilton's list, will save our committee the very considerable time and funds it would otherwise have had to expend for much the same purposes.

Another development is the five year study of college library service conducted by a committee financed by the Carnegie Corporation. This committee has collected significant data concerning service features of representative college libraries throughout the United States.

Further, a year and a half old study under the direction of the writer, and financed by the American Association for Adult Education, should within a very short while produce an instrument that our committee can use to define the general reading needs of a student body, (i. e., needs independent of course work) and to determine the extent to which the college library is equipped to meet them.

Finally, a study by Miss Odella Nation, librarian of the (Pittsburg, Kansas) State Teachers College, has worked out and compared the effectiveness of different methods of ranking collateral reference books.

Thanks to these contributory studies, the committee should produce definite data regarding certain minimum standards for college libraries within a considerably shorter time than Mr. Works had reason to expect. In a separate communication we have outlined, in greater detail than would be appropriate in this report, the steps we recommend in order to take full advantage of the present opportunities for productive collaboration with the other current studies. Because of these opportunities we believe that efforts made now in the directions indicated are likely to secure a much larger proportionate return than the same efforts distributed over a longer period of time.

The remainder of this report presents in outline the committee's activities, the

types of data secured, the next steps proposed as consistent with the committee's present budget, and a temporary provision for the evaluation of college libraries pending the formulation of more definite standards.

PROGRESS SINCE 1929 REPORT

For reasons contained in the last report and approved by the association, the immediate work of the committee was restricted to the evaluation of collateral reference collections and of the library personnel on the junior college level. It is considered best to postpone similar studies in the senior college and the university libraries until standards have been defined for junior college libraries in respect to each of their essential functions. The following is a list of the committee's activities to date.

1. Checked collateral reference holdings in 20 accredited and 7 non-accredited junior college libraries in 5 states of the N. C. A. against 371 selected titles collateral to nine highly representative junior college courses.
2. Similarly checked a representative list of general reference aids (e. g., encyclopedias, dictionaries, etc.) in the libraries of the same junior colleges.
3. Similarly determined the periodicals subscribed to by the same junior college libraries.
4. Collected facts regarding library personnel in the same junior colleges—e. g., facts regarding salary, schooling, academic status, duties, professional training, et al.
5. Collected returns from selected groups of students in four typical co-educational colleges to a checklist of topics discussed in non-fiction periodical literature published in this country since 1919. The returns are being studied to identify the non-fiction topics in which the reading interests of each student group are most pronounced.
6. Studied data available from recent surveys to select 20 factual questions to be answered by N. C. A.

inspectors evaluating junior or senior college libraries, pending the definition of valid and more precise standards.

DATA SECURED

The following types of data were secured. They should serve to illustrate the data we wish to collect extensively as a means of defining standards.

1. Percentages of selected titles found in each junior college library visited, accredited and non-accredited, shown with respect to the following nine courses: general course in English Literature; General Psychology; General Zoology; History of Western Europe; Educational Psychology; Political Science; Principles of Economics; U. S. General History; U. S. Colonial History. (Exhibit B.)

The percentages are assumed to indicate the degree to which a given library provides the materials needed to supplement class instruction in the nine courses investigated. The data also furnished a basis for comparing libraries with respect to the adequacy of their collateral reference collections in the various departments to the end of defining standards for such collections.

2. Correlation—Cost vs. selection; $r = .528 \pm .113$; $n = 8$ selected junior college courses whose collateral reference collections were examined and for which the cost of titles could be readily determined. Implication is that collateral reference books are selected more wisely in those fields where books are cheap.

e. g., English literature—best selected, least average cost; general economics—worst selected, median average cost. Hence this tendency should be allowed for in distributing book funds among departments, to prevent the selection of inferior titles. A differential is needed to increase funds for books in fields where books are more expensive. We do not find this to be a common practice.

3. Correlation—Cost vs. number of collateral references available in a given

field; $r = .192 \pm .118$; $n = 32$ courses requiring collateral reading. Implication is that no significant relationship exists between the number of collateral reference books available for a given course and the average cost of books relating to the course.

e. g., Intermediate French has 87 useful titles which average \$4.82, whereas journalism has 84 titles (almost the same number) and the average cost is \$2.36, about half as much. Hence equal allotment of book money among departments is not just, even when differences in student enrollment are met by extra sums for duplicate copies. There is no evidence that books are cheaper in those fields which require the larger number of collateral references. Here again is a sort of evidence useful in standardizing appropriations among departments.

4. Correlation — Selection of collateral references vs. size of library as a whole; $r = .226 \pm .118$, $n = 26$ junior colleges. Implication is that no significant relationship exists between the total number of volumes (in the 26 junior college libraries) and the adequacy of selection found in the ten collateral reference collections examined.

e. g., A library which contains only 3,200 volumes (the next to smallest library examined) was found to contain more of the selected titles considered useful to the nine courses than any other library. The largest library with 18,318 volumes stood sixth in respect to merit of selection. This would indicate the need for more valid criteria for the selection of collateral reference materials. Such criteria, which our committee is in process of defining, should do much to simplify both the selection of important references and the problem of evaluating college libraries.

5. Accredited junior college libraries compared with each other and with non-accredited junior college libraries with respect to selected features shown in the following table.

These comparisons are intended to suggest the extent to which the present

DATA SHOWING STATUS OF ACCREDITED AND NON-ACCREDITED JUNIOR COLLEGES IN RESPECT TO SELECTED FEATURES

	Junior Colleges		4 Accredited Senior Colleges
	Accredited	Non-accredited	
Average % of selected titles found in libraries as collateral to nine junior college courses.....	49%	36%	79%
Per Cent of selected general reference books.....	42%	17%	82%
Average total number of volumes.....	7,272	6,010	
Average appropriations for books.....	\$1,300	\$681	
Average number periodicals subscribed to.....	55	42	
Average number library staff members.....	2	1	
Average index of professional and academic training received by library staff.....	33	79	
Average student enrollment.....	959	105	

methods of accrediting recognize differences among libraries as revealed by the data collected. It will be noted that of the more significant features, the largest discrepancy is in respect to training received by the library staff.

6. Patterns of student interest in non-fiction shown separately for men and women students in each of the two college years.

The preferred topics in non-fiction reading are to be checked against the library holdings as a measure of the extent to which a given library is equipped to supply reading upon significant topics of interest to students as leisure or voluntary reading. To what extent any given library *should* supply such general reading obviously depends upon what other libraries are accessible to students, and upon various other factors.

NEXT STEPS PROPOSED

1. To carry forward an analysis of the first standard now set by the N. C. A. for College Libraries—i. e., that the college library should contain at least 8,000 "live, well-distributed volumes, exclusive of public documents, bearing specifically upon the subjects taught."

In this connection we may ask, is it desirable to standardize the total number of volumes in a college or junior college library?

Data collected by the committee and obtained from other studies suggest that for many libraries under 50,000 volumes there is wide variation between size and

the adequacy of collateral reference collections. Hence for the present and for libraries in general to standardize the total number of volumes may well do more harm than good.

To explore this question further we are attempting to answer the following questions:

What are the existing relations between total number of volumes and the number of functions a given library attempts to serve? between total number of volumes and the usefulness of the volumes for any given function? between total number of volumes and relative strength of collections representing significant differences in average cost per volume? between total number of volumes and amount, character, and distribution of voluntary reading on the part of the student body?

The facts we are after may perhaps indicate that it would be better to set a standard not in terms of total number of volumes but in terms of the books or classes of books found most useful to particular library functions, the selection of functions depending as it does upon the other sources of book supply available to the given college community, upon the size and objectives of the college, and upon other equally definite factors.

2. To compare the extent and quality of holdings contributing to the various library functions with the size of annual appropriations for the purchase of new books and current periodicals.

Such comparisons should define useful criteria with regard to costs. They should thus help to define the second of our present standards which stipulates that \$5.00 per student should be appropriated annually for the purchase of new books and periodicals.

3. To carry on the study of data regarding library personnel, to the end of selecting characteristics positively associated with adequacy of library service defined in terms of the data already suggested. Such characteristics should serve as standards in the selection and rating of personnel, thus serving to analyze and validate the third of our present standards, which requires the library to be "professionally administered." We have not found in the four colleges studied any significant relationship between professional training and salary.

4. To formulate procedures whereby the staff of a given library can apply the criteria and standards to the study and improvement of its own service. Your committee believes that the inefficiency of many college libraries is largely due to inability on the part of library officials to collect and interpret significant facts regarding problems of administration. Hence if the standards finally adopted are accompanied by definite and simple directions for the guidance of college librarians in evaluating their work, the standards should prove more effective.

TEMPORARY PROVISION FOR LIBRARY INSPECTION

In conclusion we submit as Exhibit A a list of 20 factual questions for the use of the associations inspectors in evaluating college libraries for accrediting purposes. The questions may be too numerous, in which case some may be omitted. None of them are difficult to answer and all may be answered by figures. The facts relating to each question should enable any small professional committee to pass upon the status of a given college library, pending the formulation of more definite and objective standards valid for all institutions of a

given type. The questions should also stimulate libraries to self-improvement. We are, of course, prepared to supply more detailed schedules to any inspectors preferring them.

Other exhibits held by the secretary contain a summary of data compiled by the committee as a basis for the recommendations made.

The committee asks that it be continued.

Respectfully submitted,

Edgar W. King, Miami University

Betty H. Pritchett, Coe College
Douglas Waples, University of Chicago, Chairman

EXHIBIT A.

DATA USEFUL IN EVALUATING JUNIOR OR SENIOR COLLEGE LIBRARIES

1. What per cent of enrollment does reading room seat? a. How many hours per week is library open to students?

2. How many square feet per seat?

3. How many feet of shelf space? Approximate number of feet of shelf space that could be added in present quarters to allow for future expansion?

4. How many square feet in cataloging and other work rooms?

5. How many full time members of library staff?

6. How many part time members of library staff?

7. How many months of professional library training has each full time staff member received?

8. How many years of undergraduate and post graduate academic schooling has each full time member of the library staff received?

9. How many years of library experience has each full time member of the library staff had as a full time staff member?

10. Initial salary in present position, present salary, and academic rank of each full time member of library staff.

11. Is the public catalog merely an author, title catalog or a full dictionary catalog? Approximate number of cards in catalog, figuring 100 cards to an inch?

12. What per cent of the book fund did each department receive last year? What per cent of the general book appropriation is reserved for books beyond those needed by particular departments?

13. What per cent of the student population is enrolled in the following departments: English, history, economics, psychology, philosophy, sociology, education, physical sciences, biological sciences, foreign language, art?

14. What is the total amount of money spent for (1) salaries, (2) books, (3) periodicals, (4) binding and repairs? (5) supplies?

15. What is the total number of volumes?

16. What is the policy with respect to the purchase of duplicates? Are duplicates purchased from general departmental appropriations, library departmental appropriations, or from students' fees?

17. What periodicals are now sub-

scribed to? Which are charged to which department?

18. What methods, if any, are employed by the library staff (or others) to show students how to use the library?

19. What other libraries does the town or city contain? Which are open to students?

20. List the sources from which any student may receive systematic help toward the development of efficient methods of silent reading or toward the development of better judgment in selecting reading?

(Not to be answered by inspector)

21. How many of the titles of schedule A (Reference titles) does the library carry?

22. How many of the titles of schedule B (collateral reference) does the library contain?

23. How many of the titles of schedule C (general reading) does the library contain?

Supplementary Statement to the Committee Report on Library Standards

(Submitted by G. W. Rosenlof at the Chairman's request and referred to as Appendix A)

I

Any statement of standards governing the development of the library resources and facilities presupposes that the functions of the library are everywhere co-existent and co-equal in relative importance.

Thus far the statement of functions has been, in a very large sense, based upon individual opinion and group judgment. There is, therefore, in this writer's opinion a genuine need and justification for an objective analysis of the functions now being served by junior college libraries, four year college libraries, the libraries of technical institutions and universities, etc., to the end that the relative importance of the several functions of the library may, if possible, be discovered.

Upon the discovery of these facts will

or should depend any recommendations of standards governing the development of the library as an important instructional agency in any institution.

Such an investigation must take into account the potentialities of any other library or libraries existent in the community in which the college library being studied is located.

Such a study should also reveal not only what functions are being recognized in the service of the library but also what functions are not being recognized adequately enough to insure the proper preparation of the school's product.

II

Such studies as that of Hilton should most certainly be extended to include not only the 32 specific courses as outlined by Hilton but should include all courses

of study common to all institutions accredited to North Central Association.

In the end there should be brought together a complete picture, both quantitative and qualitative, of the college library as regards its resources in (a) books of reference of general information, culture, and inspiration, (b) periodicals, (c) picture collections, (d) maps, (e) phonographic records, (f) motion pictures, (g) microscopic and stereopticon slides, and (h) manuscripts, etc.

Quantitatively, the library's efficiency will be measured mainly in terms of numbers of each of the above items.

Qualitatively, the library's efficiency will be measured in terms of the distribution of the numbers to the various classes of knowledge and their relative strength, using all those techniques already referred to in the "Progress Report" of the N. C. A. Committee for 1930.

The extent of duplication permitted as regards the whole collection as well as the several classes of knowledge represented is most certainly a qualitative measure and must receive recognition as a problem for study. What is or what should be a reasonable policy governing the duplication of titles is a question that should be answered. Only objective studies can be used in arriving at a satisfactory answer.

A further indicative factor of quality of library resources is the "comparative recency" of the materials shelved in the library. Some such technique as was used by the writer in his study of "Library Facilities of Teacher Training Institutions" but further perfected might well be recommended.

The extent to which periodicals and current literature are utilized in the library is likewise a qualitative measure of the library's resources. Techniques already referred to in your "Progress Report" might well be used, in addition to which should be added other techniques to be worked out by those engaged in making the studies.

The extent to which other library resources than those classed as "books"

and "periodicals" are recognized by colleges and universities is likewise a measure of quality. Techniques for discovering and evaluating these are yet to be perfected. These are matters to which this committee of the N. C. A. ought to give considerable attention.

III

Library service, *per se*, is most certainly an indicative factor of the qualitative resources of the library. Without adequate service neither the quantity nor the quality of the library's resources will avail in meeting needs of student and faculty.

Service is, in the first place, dependent upon the physical plant and equipment. Such problems as the housing of the library must be made a matter of careful objective analysis and study. Shall the library be housed in a separate building? Shall it be housed in the main administrative building? Shall it be centralized or departmentalized? What are the minimum number of rooms to be recommended? These and many other questions will command much thought and study.

In the next place, service is most certainly dependent upon such items of administration and supervision as are involved in questions of (a) "open vs. closed shelf policy," (b) "reserve collections," (c) "departmental collections," (d) "seminar collections," etc.

There is, of course, some question here as to whether problems of the sort just mentioned should be considered in connection with the development of standards. Indirectly, perhaps, there may be justification for their investigation by your committee because of their bearing upon final recommendations as to the size of the library, for instance, or the relative distribution of titles within the several classes of knowledge.

In a certain sense, "library hours"—the extent to which the library is kept open to students and faculties—has a bearing upon the extent to which library resources must be developed. This suggests, therefore, a minor problem for investigation.

IV

Randall's investigation of library personnel as well as my own should be further improved as regards the techniques used and should be further extended and adapted to use in measuring adequately the status—academical, professional and technical—of all library staff members in all colleges accredited to the N. C. A. These findings should then in turn be correlated with findings as regards the personnel in other types of technical, professional and liberal arts colleges of the country.

These techniques should provide for objectively discovering, training, tenure, duties, and salary of all workers.

There is need for "job analyses" of the various types of service rendered by all library workers. Such analyses reveal the types of training that should be required in preparing persons for library positions. This preparation should then become the *sine qua non* to appointment on a staff. (See writer's blank, Section V)

V

Whether there is any justification for basing budgetary requests for the library on student enrollments is a matter of serious doubt. The standard in this regard as now existing is purely hypothetical.

A fundamental and searching inquiry into the relation of library expenditures to total college expenditures should be recommended. The technique used by the writer is revealed in his data blanks and his treatment of the data secured in his study, "Library Facilities of Teacher Training Institutions." These should be subjected to further rigid scrutiny and revision and then applied to a study of N. C. A. schools as well as schools not accredited to the N. C. A.

VI

All the above matters are, in my judgment, apropos to the whole question of building correct standards for the library.

To carry out any and all of these investigations will require a period of several years perhaps and a considerable sum of money. Not only will these problems be investigated by the committee itself, but they will be recommended for investigation to graduate students in graduate library schools, such as those at Chicago, Columbia, California, and elsewhere.

Not until concrete, objective data are available should the committee recommend any definite standards for adoption by the North Central Association of Colleges and Secondary Schools.

Recommendation Concerning the 1930-31 Budget of the Committee on College Library Standards

For reasons suggested in its 1930 report, the committee feels that present opportunities to co-operate with other groups at work on problems of the college library justify an increase in its budget sufficient to permit the collection and preparation of data needed to determine valid standards for both junior and senior college libraries during the next few years.

The scope of the committee's activities in this direction should, of course, be delimited by the data already available (as in G. A. Works' *Problems of College*

and University Libraries) and by the activities of the other groups and individuals mentioned in the report. The most significant of these groups is a committee of the Carnegie Corporation, whose problem consists in selecting those college libraries most deserving of grants for the purchase of books. I have been invited to sit with this committee and am acquainted with its plans. The following proposals are intended to supplement the work of the Carnegie Committee at various points but do not at all overlap them.

It is proposed that our committee undertake to prepare, with a view toward publication, a somewhat inclusive report upon the procedures, equipment, and personnel whereby various distinct objectives of the college library are efficiently attained, as follows:

- a. *To supply references collateral to the text materials of each department.*

The data pertinent to this objective include

1. Extent to which selected titles of Hilton's list are held by each library of junior colleges offering some or all of the 52 courses for which Hilton's lists are prepared.
2. Same for senior colleges using Carnegie lists, excluding titles not recommended by college instructors.
3. Facts regarding circulation of selected titles among students—for selected departments in both junior and senior colleges.
4. Facts regarding differences in emphasis of selected titles by instructors of same departments in different colleges as indicated by collateral reading assignments.
5. Facts regarding relationship between size and departmental distribution of book-fund on the one hand, and adequacy of reference collections on the other; also relationship between adequacy of collections and relative cost of books in each department.
6. Physical conditions affecting students' use of reference books in the library.
7. Charging procedures and supply of duplicates as affecting circulation of reference books among students.
8. Methods of ordering reference books as related to adequacy of reference collections.
9. Facts relating to selection,

cost, use and care of periodicals for collateral reference purposes.

- b. *To supply the students' needs for general reading of a substantial sort—i. e., reading upon topics important to the student but not covered by any course of instruction and not including reading for mere entertainment, best sellers, etc.*

Data pertinent to this objective include:

1. Distribution of titles voluntarily read by students in residence, grouped as to sex, college year, scholarship, and major department. These data will be available from current studies at Minnesota, Chicago, and Ohio State. They should be compared with data obtained from representative junior and senior colleges in which students are largely dependent upon the college library for their supply of materials for voluntary reading.
2. Patterns of student interest in a representative list of topics discussed in contemporary non-fiction. (Association of Adult Education Study.)
3. Comparison of actual reading and desired reading (1 and 2) to determine discrepancies.
4. Comparison of desired reading and library holdings to determine interesting topics on which readable materials are not available.
5. Comparison of actual reading by students of small colleges served only by college library and size of general book fund; i. e., funds spent for books unrelated to the reference needs of the various departments.
6. Methods used to stimulate and direct students' voluntary reading, whether by the

library staff or by other college departments.

- c. *To supply the study needs of faculty members, as distinct from materials needed for faculty research.*

Data pertinent to this objective include:

1. Titles of books purchased for personal use by faculty members of selected departments.
2. Titles purchased by libraries for personal use of instructors as determined by circulation data.
3. Titles desired by faculty members for personal use, excluding research materials, but not purchased either by libraries or by the instructors themselves.
4. Cost of titles desired by instructors for personal use, by departments, as compared with cost of reference collections and general reading collections.
5. Returns from representative instructors of selected departments in colleges enrolling fewer than 500 students to indicate how far instructors are acquainted with recent works in the given field. (cf. President Wriston's interest in using the college library as a means of keeping faculties in touch with current professional literature.)

Other library objectives for which similar data might readily be gathered and studied with reference to standards are:

- d. *To supply research facilities to faculty members.*
- e. *To supply the reading needs of extension students.*
- f. *To supply the reading needs of alumni and former students.*

FUNDS REQUIRED

The foregoing sketch of data pertinent to the evaluation of college library organization, equipment, and service, ob-

viously might be expanded or condensed to any desired extent. The items mentioned are those considered by the writer to bear most directly upon the educational functions of the library. They underlie rather than directly describe the external factors of library administration. Hence they represent data which professional librarians have done very little to collect, but which need to be collected and studied to the end that the library may contribute most directly to the objectives of the several departments and of the college as a whole.

As has already been stated, a large part of those data may be secured from secondary sources with considerable saving of expense. To prepare a report covering all the items mentioned for objectives a, b, and c, would probably cost, for travelling and clerical expenses, about three thousand dollars. It is possible that this sum might be considerably reduced by appropriations from the Graduate Library School, provided students from the school are engaged in collecting the data, as they may well be.

If the commission approves the idea of a somewhat inclusive report, an appropriation of \$1000 a year for two or more years, excluding cost of publication, if any, should cover a substantial part of the work indicated, with assistance contributed by the Chicago Graduate Library School and other institutions interested. I therefore recommend this increase in the committee's budget.

A smaller appropriation would cover the work in proportion. A larger appropriation or one thousand dollars a year over a longer period of years would permit some attention to each of the six objectives.

The most expensive project is probably that concerned with an evaluation of university library research facilities. Adequate attention to this would doubtless require an active committee of specialists in each of the research fields examined.

Respectfully submitted,

Douglas Waples, Chairman

Committee on Library Standards.

College Entrance Requirements in English*

By E. L. MILLER

ASSISTANT SUPERINTENDENT OF SCHOOLS, DETROIT, MICHIGAN

This report is simply one of progress.

The National Council of Teachers of English was founded in 1910. During the next seven years this body was engaged upon the development of a scientific procedure in the teaching of English in the secondary school. In 1917 Mr. James F. Hosis presented a report to the North Central Association in which he had embodied the results secured up to that time by the National Council of Teachers of English. This report, published in the Proceedings, had a widespread influence in North Central schools until 1923, when it was revised and republished by a committee consisting of the following:

Clarence Stratton, Director of English, Cleveland Public Schools.

Miss May McKittrick, Head of English Department, East Technical High School, Cleveland.

Charles L. Spain, Deputy Superintendent of Schools, Detroit.

Fred N. Scott, Professor of Rhetoric, University of Michigan.

E. H. Kemper McComb, Principal of the Emmrich Manual Training School Indianapolis.

C. S. Pendleton, Assistant Superintendent of Schools, Winnetka, Illinois.

R. L. Lyman, Professor of English, University of Chicago.

Henry S. Crane, Board of Education, Chicago.

T. W. Gosling, Superintendent of Schools, Madison, Wisconsin.

Miss Marjorie H. Nicolson, University of Minnesota, Minneapolis.

Miss Sara T. Muir, Lincoln High School, Lincoln, Nebraska.

E. E. Chiles, Ben Blewitt Junior High School, St. Louis.

Frederick H. Bair, Superintendent of Schools, Colorado Springs.

J. W. Searson, Professor of English, University of Nebraska.

Edwin L. Miller, Principal of Northern High School, Detroit. (Chairman.)

This committee presented a report which was unanimously adopted by the North Central Association on March 18, 1922, and ordered printed in its Proceedings with the recommendation that the North Central colleges print it in their catalogues. The final provision in the report thus adopted was that it should be subject to revision at reasonable intervals. In pursuance of this policy, the chairman of the Commission on Unit Courses and Curricula in 1929 appointed the following committee to revise this document:

F. H. Bair, Superintendent of Schools, Shaker Heights, Cleveland, Ohio.

Miss Essie Chamberlain, Oak Park School, Oak Park, Illinois.

Thomas W. Gosling, Superintendent of Schools, Akron, Ohio.

W. Wilbur Hatfield, Secretary of the National Council of Teachers of English, Chicago, Illinois.

Miss Rewey Belle Inglis, President of the National Council of Teachers of English, Minneapolis, Minnesota.

Prof. R. L. Lyman, University of Chicago, Chicago, Illinois.

E. H. Kemper McComb, Principal, Emmrich Manual Training School, Indianapolis, Indiana.

Miss Sarah T. Muir, Lincoln High School, Lincoln, Nebraska.

Marquis E. Shattuck, Director of Language Education, Detroit, Michigan.

Edwin L. Miller (Chairman), Assistant Superintendent of Schools, Detroit, Michigan.

In order to gather the best ideas and devices, from all the schools in the As-

*This committee report was made to the Association on Friday, March 21, 1930.—The Editor.

sociation, this committee sent out to the 2,242 high schools of the Association the following questionnaire, receiving in reply 1,167 answers. The questions and votes follow:

I. Should the North Central Association continue its present policy of isolation from the Committee on Uniform College Entrance Examinations in English?

Yes 579 No 403

II. Why?

Prior to 1917, the North Central Association was in the habit of sending three delegates to the Committee on Uniform College Entrance Examinations in English. The conditions then prevailing in eastern schools and colleges for college entrance were so different from those in the North Central territory that it was impossible for the sections to agree, although large concessions were made by the committee. It was also impossible, and it would be impossible now, for the North Central Association to obtain adequate representation upon this committee. For these reasons the North Central Association ceased to send delegates.

The chief reasons for going back to the committee are that national standards, instead of sectional, are desirable on the score of uniformity and economy. The chief reason against going back is that the standards of the committee are not national but sectional, and the time apparently has not yet come when an agreement can be reached.

III. Do you approve of the following proposition? If not, please proof-read the paragraphs which you think should be amended, or write your suggestions on the back of these sheets.

1. The high school course in English should be organized primarily with reference to basic personal and social needs.

Yes 1111 No 40

2. To the study of English should be devoted not less than five units in Grades 7-12, with additional electives in Grade 11 or Grade 12.

Yes 1107 No 34

3. English comprises two subjects, language-composition and literature-reading.

Yes 1069 No 59

4. Though related, these involve radically different pedagogical methods. Hence in the course of study they should be separated. For the junior high school grades, units of work in literature and composition should be correlated in the same semester according to the block system. Moreover, literature may be used in all senior high school composition classes, effective expression being helped through the use of literary models and through constant insistence upon good, fluent, and accurate expression in all subject-matter classes, including those in literature. The separation of literature teaching from composition teaching makes possible the selection and use of the right models.

Yes 993 No 112

5. The aim of teaching oral and written expression is to give the learner the power to communicate his ideas to others. The subject-matter is the whole body of the pupil's ideas, emotions, and aspirations. Its medium is the English language. Expression touches life everywhere and touches literature whenever a pupil has an opinion to express either orally or in writing, because literature furnishes models of expression.

Yes 1144 No 6

6. Since it touches life everywhere, composition can be taught successfully only through the interest of English teachers in the writing and speaking of pupils in all subjects and through the supervision of all teachers in the oral and written reports of their own pupils.

Yes 1117 No 24

7. Language-composition includes several subjects, among them being oral expression, grammar, rhetoric, written expression (which includes spelling, punctuation, and capitalization). Both written and oral composition are best taught by the following cycle of processes: (1) Choice of a subject; (2) gathering of material; (3) organization of material; (4) oral composition. If the composition is to be written, the fol-

lowing additional processes are recommended: (5) Written composition; (6) revision [which involves grammar and rhetoric]; and (7) publication [(a) read to an audience in class or club; (b) mimeographing; or (c) printing.]

Yes 1033 No 36

8. The aim of literature-reading instruction is to develop in pupils the power to understand, feel, and appreciate the ideas, emotions, and aspirations of others. In other words, it is to build up the power and habit of re-living experience. As the vehicle by which thought and feeling about subject matter are transferred from mind to mind, it touches all content subjects.

Yes 1150 No 19

9. Like composition, literature includes several subjects, among them being reading (both silent and oral), oral and written discussion, declamation, play production and the history of literature.

Yes 1087 No 5

10. The study of literature should create in pupils a desire to read and the habit of reading. It should be conducted so as to form in the learner well-defined tests with regard to the type and the quality of his reading and so to enable him independently to select books for his avocational or vocational reading. This means the provision in the classroom of many books of many types and the abandonment of that type of course of study which tries to satisfy these aims by the use of a very limited number of books. The study of literature in Grades 7-12, inclusive, may well be constructed to include various patterns (functional patterns for the junior high school: types of literature patterns and historical patterns for the senior high school).

Yes 1162 No 2

11. The individualization of instruction is of great importance. For example, children whose language habits are natively correct should be excused from drill lessons in grammar and other drill subjects. On the literature side this principle should operate so as greatly to increase the amount of independent reading. The extension of independent

library reading in all subjects is heartily to be encouraged.

Yes 1034 No 74

12. At the end of Grade VI pupils should be able: (1) To express clearly and consecutively, either in speech or writing, ideas which are familiar; (2) To avoid gross grammatical errors; (3) To compose and mail a letter; (4) To spell their own vocabulary; (5) To read silently and after one reading reproduce the substance of a simple story, news item, or letter; (6) To read aloud readily and intelligently simple news items, lessons from textbooks, or literature of such difficulty as "The Ride of Paul Revere" or Dicken's "Christmas Carol;" (7) To quote accurately and understandingly several short poems, such as Bennet's "The Flag Goes By" and Emerson's "The Mountain and the Squirrel."

Yes 1027 No 80

13. Building upon this foundation, when it exists, and upon the actual attainment of pupils when it does not exist, there should be organized in each high school a course in English to meet the aims and principles set forth above. The details of such a course must vary to satisfy the requirements of different communities and of pupils of different grades of intelligence. A highly condensed outline of such a course follows:

Yes 1065 No 49

To composition and literature, alternating possibly by semesters or preferably in junior high schools by shorter periods, should be assigned five recitations or conferences of 45 minutes a week, or an equivalent. General or home reading by individuals should be required throughout. Proper emphasis should be placed both upon speaking and writing and upon oral and silent reading.

Yes 1069 No 46

GRADE VII

A—Composition

The materials for oral and written expression in Grade VII should be derived from children's play; their work in school and out; their direct observation of processes, scenes, objects and occupations; the books they read; and their imagina-

tion. The nature and spirit of written work most appropriate for this grade may be found in informal letter-writing and other functional forms of expression which draw their content from the sources named earlier in this paragraph. Formal compositions and themes assigned as such should be discouraged.

Yes 1079 No 10

B—Minimum Essentials

To secure correctness there must be attained a mastery of certain fundamentals in the technique of language. In Grade VII there should be investigation of the language habits of all pupils so that instruction may begin at the proper level. The aim should be to master these topics: recognition of the parts of speech by function; subject and predicate, object, predicate noun and adjective; inflection of nouns and personal pronouns for number and case; the idea of tense; clauses and phrases as groups of words with the functions of single words; and necessary punctuation. Words used in all school subjects must be spelled correctly.

Yes 1052 No 27

C—Reading

(1) For the literature work of the junior high school grades, the general principle of organization should be some systematic interpretation of happy and successful living.

(2) For the general reading for this and the following grades there should be provided a wide range of books, papers, and magazines dealing with wholesome living, worthy home membership, vocations, citizenship, the worthy use of leisure, and right conduct.

(3) Poetry, fiction, science, art, ethics, civics, sociology, history, biography, and travel should be included, both new and classic, and can be included in the functional arrangement suggested above.

For class work in Grade VII some of the shorter poems of Longfellow and Whittier, Miles Standish, Evangeline, The Great Stone Face, Rip Van Winkle, The Legend of Sleepy Hollow, Treasure

Island, The Gold Bug, Stories of King Arthur, and The Jungle Books are of about the right grade of difficulty.

Yes 1090 No 20

D—Individual Needs

In line with the foregoing paragraphs, in Grades VII, VIII, and IX there must be recognition of the wide range of differences in language attainment found in any group of pupils. By the use of objective measurements, weaknesses and proficiencies may be discovered, the needs of individuals diagnosed, and suitable materials of instruction determined. Instruction in language control must increasingly turn away from uniform class procedure toward differentiation and adaptation to individual needs.

Yes 1090 No 14

GRADE VIII

A—Composition

In addition to the composition materials suggested for Grade VII it is advisable, in Grade VIII, to use civic questions, imaginary journeys, admirable characters in life or books, questions of school life, trips. These may be treated in expositions, narratives, descriptions, conversations, discussions, letters. Particular attention should be given, in this and all subsequent grades, to the art of making well-organized, fluent, and correct recitations and reports in other subjects. Progress should be made in the planning of themes, the manipulation of sentences, spelling, and punctuation.

Yes 1089 No 1

B—Grammar

The study of grammar in Grade VIII should add a mastery of the essential elements of the sentence (subject, predicate, modifiers, connectives), of clauses as parts of compound and complex sentences, of common and proper nouns, of classes of pronouns, of the person, number, and voice of verbs, of the classification and comparison of adjectives and adverbs, of the choice of prepositions, of conjunctions as coordinating and subordinating.

Yes 1058 No 20

C—Reading

As material for class work in literature in Grade VIII, some of the short poems of Holmes, Lanier, Riley, and Field, Whittier's *Snowbound*, Scott's *Lay of the Last Minstrel*, Macaulay's *Horatius*, Longfellow's *Tales of a Wayside Inn*, Norse Myths, Cooper's novels, Stevenson's *Kidnapped*, Kipling's *Captains Courageous*, Kate Douglas Wiggin's *Rebecca of Sunnybrook Farm*, A Midsummer Night's Dream, The Tempest, Franklin's *Autobiography*, and Warner's *In the Wilderness* offer a reasonable range. In the junior high school, this and similar material is to be organized and systematized about units of daily life.

Yes 1024 No 36

GRADE IX**A—Composition**

Particular vocations and current events may be added in Grade IX to the composition materials. The most available means of attaining clearness, force, and interest in composition should be presented informally; the chief features of explanation and narrative should be learned inductively; much drill should be devoted to social and business letters, spelling, word structure, and punctuation. At the end of Grade IX a pupil should be able to avoid any ordinary error in grammar, to improve expression by varying grammatical structure, and to write good social and business letters.

Yes 1106 No 14

B—Grammar

Such grammar should be taught as is necessary for use or to supplement previous deficiencies.

Yes 951 No 36

C—Reading

Among the poems suitable for Grade IX are Browning's *Herve Riel*, Lowell's *The Courtin'*, Scott's *Lady of the Lake*, Shelley's *To a Skylark*, Emerson's *Concord Hymn*, Keat's *On First Looking into Chapman's Homer*, Whitman's *Captain, My Captain*, and Poe's *Helen*.

Poe's *Purloined Letter*, Hawthorne's *Ambitious Guest*, O. Henry's *Chaparral Prince*, Davis' *Gallegher*, and Hale's *Man Without a Country* are types of the stories suitable to this grade. *Ivanhoe*, *Quentin Durward*, and *Kim* are desirable novels. *Julius Caesar* is the best play; Irving's *Christmas Sketches* are useful. Palmer's *Odyssey* and Bryant's *Iliad* (in part), with related myths, are well-nigh indispensable. This material ought not to be spread miscellaneous before pupils, but ought to be functionally grouped according to its spirit and message.

Yes 919 No 68

GRADE X**A—Composition**

To the work in composition Grade X brings a wide range of new school studies, social relations, and knowledge of the world's work and play. In the field of rhetoric it is the time to study the building of paragraphs, sentence manipulation (particularly clearness through connectives, the correct placing of modifiers, and unmistakable reference), conciseness, word-building. Spelling and punctuation must not be forgotten. To the forms already used may now be added telegrams, news stories, editorials, advertisements, and the dramatization of situations. The products should be greater clearness and force in speech and writing, increased power of persuasion, ability to handle the simple problems of business correspondence, and the habit of using the newspaper rightly.

Yes 1121 No 5

B—Reading

In the senior high school, literature should be studied from the literary and the historical points of view. In the tenth grade it is wise to consider American history as interpreted through American literature. In case it seems advisable not to study American literature in this grade, appropriate material will be found in the following: (1) Poems: Lowell's *Vision of Sir Launfal*,

Tennyson's *Enoch Arden* and *Ulysses*, Coleridge's *Ancient Mariner*, Burns' *Bannockburn*, and Arnold's *Sohrab and Rustum*; (2) Plays: Shakespeare's *As You Like It*, Drinkwater's *Abraham Lincoln*; (3) Fiction: Blackmore's *Lorna Doone*, George Eliot's *Silas Marner*, Dickens' *Tale of Two Cities*, Lew Wallace's *Ben Hur*; (4) Other prose: Irving's *Alhambra*, Stevenson's *Travels with a Donkey*, Burroughs' *Essays*, and Lincoln's *Speeches*.

Yes 1063 No 25

GRADE XI

A—Composition

In Grade XI the work in composition should become more definitely technical. The secrets of literary effect should be studied. Outlines, themes, debates, parliamentary usage, related letters, short articles, editorials, and descriptions may be produced. Particular emphasis must be placed on wealth of material, effective organization, and correct technique.

Yes 1086 No 22

B—Literature

It is probably best to make this year a study of English literature arranged chronologically, beginning with the Anglo-Saxon Period. Among the best books for this study are *The Idylls of the King*, *Macbeth*, *Hamlet*, Milton's *Minor Poems*, Wordsworth's *Shorter Poems*, Macaulay's *Essays*, and the novels of Walter Scott, Jane Austen, Dickens, Thackeray, and George Eliot. Provision should also be made for the study of speeches on citizenship and of the best modern prose and verse.

Yes 924 No 141

GRADE XII

A—Composition

In Grade XII pupils who have done with credit the work outlined for previous grades should be permitted to follow up their special interests in order to prepare them for their vocations. Among such special interests are newspaper work, commercial correspondence, advertising, debating, the short story,

verse writing, dramatization, scientific description. Pupils who show marked deficiency in the work outlined for previous years, on the other hand, should be given individual attention or grouped in drill classes according to their needs.

Yes 1052 No 34

B—Literature

The twelfth grade may wisely be given over to electives in literature as suggested below. However, if one basic course is desired, a study of world literature arranged by types and including selections from many languages in translations would be wise. There may also be a number of courses to be elected by pupils according to their aptitudes. Among these might be the drama, the novel, short stories, speeches, essays, poetry, or the work of a single author.

Yes 954 No 111

Three possible organizations, indeed, may be suggested for the literature work in Grades X, XI, and XII. First, Grade X may be devoted to a chronological survey of American and Grade XI or XII to a chronological survey of English literature. Second, each grade may be set aside for the study of one or more types of literature, each to be traced historically. Third, books may be selected with a view to proper variety within the range of the tastes of a given group of pupils.

Yes 882 No 68

14. To attain the ends outlined above, encouragement should be given to school papers, dramatics, debating, public speaking, literary clubs, and such other agencies as supply proper motivation to students.

Yes 1058 No 5

15. The number of pupils in composition classes must not be excessive.

Yes 1119 No 29

16. Suitable libraries, trained librarians, and special instruction in the use of libraries are necessary.

Yes 1126 No 24

17. Special English rooms, equipped with books and filing devices, are as necessary as are laboratories for the

study of biology, chemistry, and physics.

Yes 1031 No 120

18. Properly trained teachers are indispensable.

Yes 1154 No 1

19. At the end of Grade XII, the average graduate should possess a working knowledge of the essentials of good usage; should be interested in the correct and fluent use of English language both in speech and writing; as an ideal at least should regard slovenly English as being in the same category with dirty hands; should have a rooted habit of correct speech; and should possess some power in its effective use. On the appreciation side he should know the main facts of the history of English and American literature and be familiar with a few great books (say some of Homer, some of Shakespeare, and some of the Bible); should have an interest in reading and a somewhat cultivated taste in books; should have the habit of reading for pleasure; and should possess the power to read intelligently.

Yes 1116 No 14

20. The foregoing plan should be conceived of as temporary and subject to revision in the light of further study and experience. The committee regards it as sufficiently conservative and at the same time progressive enough to justify its adoption at the present time, but recommends that it be revised at intervals of three or four years so that full advantage may be taken of the best modern thought and experience. For example, the establishment of clinics in spelling, handwriting, and silent reading may be safely recommended at this time as experiments which may ultimately result in a better adjustment of the English teacher's load, in important reductions in the cost of English teaching, and in the improvement of the product of that teaching.

Yes 1098 No 16

As has already been stated, this report is one of progress. The committee has in its possession a large mass of comments from the twenty states that comprise the North Central Association, but lack of time has rendered it impossible

to study this material. A close examination and evaluation of this accumulation will probably reveal that it is rich in suggestions. The report, as it stands, is not a statement of college entrance requirements, but a course of study which may be used as a foundation for such a statement.

The committee, in view of these facts, has asked to be continued with a 1930-1931 budget of five hundred dollars, to be used for clerical work and for traveling. The program of the committee for the coming year is (a) to study the material now in its possession; (b) with the aid of a committee from the Commission on Institutions of Higher Learning, to translate its findings into terms of college entrance requirements; and (c) to secure the cooperation of other organizations. This program received the official approval of the North Central Association at its meeting in Chicago March 21, 1930.

* * * * *

Mr. Miller in presenting this report to the Association spoke, in part as follows.*

Mr. President, Ladies and Gentlemen: The first thing I want to say is that this report this morning is not in any sense a final report but simply a report of progress.

If you will turn your attention to the first paragraph on the first page you will find there a statement of the genesis of this Committee. As a matter of fact, the material in this questionnaire began to grow in the year 1910 with the organization of the National Council of Teachers of English. It was brought in 1917 before the North Central Association in a report which was made by Mr. James F. Hosick and which immediately began to exercise a widespread influence.

In 1922 a further study was made of this material. It was brought up to date and was published by order of the North Central Association in much the form in which you see it today in this paper. The final recommendation of

*This portion of the report is taken from the Official Minutes of the Association—The Editor.

that 1922 report was that the whole matter needed to be restudied at intervals of four or five years. The present Committee is the result of that policy.

We will turn over the page. The first paragraph will tell you what our method of procedure has been this year. In order to ascertain to what extent these ideas had become acceptable throughout North Central territory to teachers of English, we sent this questionnaire to each of the North Central high schools.

In spite of the fact that it has been a severe winter both in the amount of snow and the number of questionnaires, we received back 1167 of these rather complicated papers fully filled out.

The job of tabulating them was rather formidable. We organized what I might describe as a questionnaire party. We gathered together about thirty teachers. They went to work at nine o'clock in the morning and worked steadily until three in the afternoon, with about twenty minutes for lunch. In all, they tabulated according to my calculations 46,680 items. I can tell you in a nutshell what the result of that tabulation was.

Except for the first question, there was a very decided unanimity in favor of the proposition set forth by the Committee. The highest number of affirmative votes on any one item was 1162. The highest number of negative votes on any one item was 141. The lowest number of affirmative votes on any item was 882. The lowest number of negative votes was 1.

Let me call your attention for a moment to the first item: "Should the North Central Association continue its present policy of isolation from the Committee on Uniform College Entrance Examinations in English?"

There is some history connected with that. In the old days it was the practice of the North Central Association to send three delegates to that Committee. I had the honor on two occasions of being with Mr. Hosick and Dr. Scott on that Committee. I should like to say that when we were down in the East with the learned gentlemen from New England and the Middle States who

composed most of that committee, we felt like three grains of mustard seed in a bushel of chaff. (Laughter) Our influence, you can well imagine, was not very marked. We found that their needs, their ideals, differed from ours.

As a matter of fact, that kind of representation, we concluded, was wholly inadequate. The population which they represent east of the Alleghenies, I suppose, amounts at the present time to about 30,000,000 people. The population represented by the North Central Association, I would say as a guess, today amounts to 50,000,000. If they would give us a representation on that committee in the proportion of five to three, I believe it would be our true policy to join with them, because there is undoubtedly an advantage in having a national standard in these matters. But I do not believe that the time has yet come when we can afford to join hands with them on any terms which they would be willing to accept.

In order to ascertain the sentiment of our school men on that subject, however, we formulated the first question. The affirmative vote, that is the vote for staying as we are, was 579, and the negative vote was 403. That is the most marked division of opinion which we discovered with regard to any of these questions.

The next item to which I want to call your attention is No. 4. That is a more or less controversial matter, should we separate the teaching of composition from the teaching of literature. It was a highly controversial matter fifteen years ago. The main argument is simply this, that if you mix the two in teaching you are usually going to get a good deal of teaching of literature and very little teaching of composition. I have known students in a high school, in the fourth year, who had not been given the opportunity to write one composition. There is a similar danger with regard to the teaching of grammar. If you put the teaching of grammar into the same course with the teaching of composition, it is a very easy thing to take a well organized grammar and teach it in a perfunctory manner. It requires

an immense amount of wisdom and energy to teach composition. Human nature being what it is, teachers, however conscientious they may be, if they lack vision or energy, are apt to take the course of least resistance. Nevertheless, on this controversial question there were 993 affirmative votes as against 112 negative votes, which is significant.

The next item to which I particularly wish to call your attention is No. 12, attainments which the pupils should have made at the end of Grade VI. The affirmative vote there was 1027 and the negative vote was 80.

I received a comment from one person which I think is significant. He said, "If a boy or a girl at the end of the twelfth grade can do all the things that you have enumerated as being the proper attainment of sixth graders, you won't have any college freshmen failing in English." There is a good deal to that. It might be a subject for an extended discussion.

In this connection, I want to call your attention, however, to the next item: "Building upon this foundation, when it exists, and upon the actual attainments of pupils when it does not exist," etc. In other words, the Committee recommends that we face the facts as we find them and model our procedure accordingly. On No. 13 the affirmative vote was 1,065, and the negative vote was 49.

If you turn to Grade VIII, Page 5, under the head of Reading, there is one item to which I wish to call your attention. You will find *The Tempest* included as a proper play to be read in Grade VIII. We found some violent opposition to the inclusion of *The Tempest* which I think was justified. *The Tempest* was included, I may say, as the result of extensive studies made before this Committee was formed. However, the vote on C was "Yes" 1,024; "No" 36.

With regard to item C on the next page, in Grade IX, you will find *Quintin Durward* included. Somebody said, "If you want a boy to hate Scott, the

way to do it is to make him read *Quintin Durward*."

I also discovered quite by accident that in one school the pupils are now required to read in this grade the *Autobiography of Jonathan Edwards*. I never read the *Autobiography of Jonathan Edwards*, but I know enough about his style to hazard a prediction that I never shall. You might just as well give a boy Kant's *Critique on Pure Reason* at that stage of his development. Some such guide as this perhaps will enable teachers and school administrators to avoid such errors. The vote on this list was 919 in the affirmative and 68 in the negative.

We will pass on to Item 15: "The number of pupils in composition classes must not be excessive." Somebody told me that that was too platitudinous, and I think I agree. I don't know, however, and neither does any member of the Committee know, what an excessive number is. In general, however, I will hazard the statement that the fewer pupils you have in a composition class the better the work is likely to be. Big classes in composition are deadly.

No. 17: "Special English rooms, equipped with books and filing devices, are as necessary as laboratories for the study of biology, chemistry, and physics." That statement appears to me personally to be extreme. At the same time it was carried by 1,032 to 120. I think I would substitute for the word "necessary" the word "desirable."

Finally, let me call your attention to Items 19 and 20. They are perhaps as important as any statements which the questionnaire contains. There is what we have done so far. What we propose to do during the coming year, is, first, to continue the study of the material which we have accumulated as the results of this questionnaire. We may find in it things which will cause us to modify these statements.

The second thing which we wish to do, with the assistance of the Commission on Institutions of Higher Learning, is to translate this foundation into terms

that can be printed in the catalogs of colleges and universities.

The third thing which we wish to do is to secure the cooperation of other organizations, possibly, for example, the National Council of Teachers of English who are engaged upon the same projects, and possibly the aid of other regional associations. I am going to ask you to be so good as to signify your acquiescence in that latter proposition.

I started out by saying that this is simply a statement of progress; it is not in any sense a final report. I like to think, in this connection, of Browning's remark: "Progress, man's distinctive mark alone, not God's and not the beasts'. He is; they are; man partly is and wholly hopes to be."

In other words, we hope we made some progress. We hope to make more, and we ask your cooperation.

Thank you. (Applause)

PRESIDENT MORGAN: You have heard the report. There is not time for extended discussion but we will take a few minutes for questions if you desire to ask them.

MR. MILLER: Would it be proper for me to make a motion to the effect that this Committee be granted the privilege of cooperating with other organizations, if it finds that such cooperation is possible and desirable during the coming year.

PRESIDENT MORGAN: Mr. Miller makes the motion that this Association grant to the Committee the privilege of cooperating with other organizations if it finds it advisable during the year.

The motion was seconded, put to a vote and carried.

An Interesting Letter

The Editor frequently receives letters of unique sorts. The following is one. How should he have answered it?

(The Letter)

My dear Mr. Davis:

The question of teaching Hebrew in the high schools has arisen in our city, and I am wondering if you will answer the following questions for me:

1. Would your Association recognize it as a dead language or a modern language?
2. Would credit be given in colleges and universities the same as for Latin, Greek, German, French, and Spanish?
3. Would two or four years in Hebrew mitigate against college entrance, or be recognized the same as Latin?

Thanking you for an early reply, I am

Yours sincerely,

The National Survey of Secondary Education*

LEONARD V. KOOS

THE UNIVERSITY OF CHICAGO

ASSOCIATE DIRECTOR OF THE NATIONAL SURVEY

There is both a general and a special reason why at least a brief statement should be made before the Association concerning the National Survey of Secondary Education now in progress. The general reason takes its rise in the interest the Association has always shown in investigations of secondary schools. The special reason is the fact that the impulse for the survey originated in this organization and that without the efforts of the committee you appointed to urge the survey it is doubtful whether the appropriation now available for the work would have been made.

Before saying anything directly concerning the National Survey of Secondary Education it is desirable to call to mind again the recent changes in our high schools that after all make such a large-scale investigation desirable. We all know these changes to have been many and far reaching. One of the most fundamental is the increase in the proportion of children of high school age who are in school. In 1890, for the country as a whole the proportion was not far from 3 to 4 per cent. During the intervening forty years the proportion has mounted to something like 50 per cent or more. There is one state in which approximately three-fourths of all children of high school age are in school. It would be difficult to overestimate the influence on our schools of such an inpouring.

This influx of youth into the schools has had many accompaniments, some of which may be briefly reviewed. One of these is the increase in the amount and kinds of work offered. This expansion

of the offering has been in large part owing to the needs represented in the wider range of ability and interest of the student body. Many new subjects have been added to the curriculum and many new courses developed in some of the older subject fields. Among the new lines are vocational courses in considerable variety and even specialized vocational schools. Novel methods of teaching known by such names as directed or supervised study, the socialized recitation, the project method, and the like, made their appearance. These, too, seem to have been devised to meet the needs of an enlarged student body. What is known as the extra-curriculum—that great array of out-of-class activities—has also crowded in to claim the attention of students and the time and energy of teachers. In an important sense these activities may be thought of as an extension of the courses offered in the schools. Programs of guidance have made their way into the modern high school, prompted by a composite of factors, among them the student's need for help in selecting from the wide variety of subjects and in considering the complex problem of the relationship of subjects taken to his occupational destination.

Two other movements known to be affecting the high school in fundamental ways are the junior high school and the junior college. There is great significance in the fact that they are contemporary movements and in the further fact that they are both gaining ground rapidly. There are many communities in which both these types of reorganization have been effected, so that we may quite properly say that the junior high school at one end of the high school and

*A paper read before the General Association at its meeting in Chicago, March 20, 1930.
—The Editor.

the junior college at the other are achieving for us an extended high school which comprehends the whole of the period of secondary education and not merely a part, as does the older four year high school.

It does not require argument to understand that a situation of such rapid change as now characterizes secondary education teems with problems. A virtually endless procession of questions is presented to the workers in the schools. It is, therefore, most timely that Congress last year made provision (in the total amount of \$225,000) for a three-year study of secondary education.

ORGANIZATION OF THE SURVEY

A word may be said in description of the set-up for making the survey. Secretary Wilbur of the Department of the Interior designated Commissioner Cooper of the Office of Education as Director of the Survey. He also designated nine "expert consultants" who as a group advise the director and his staff in matters relating to the scope and methods of the survey. This group has met twice in the Office of Education, at its first meeting determining the larger fields for investigation and at its second meeting considering and approving a more detailed outline of the survey. There is also an "Advisory Committee" of thirty members which meets less frequently than the group of consultants. The members of this committee are consulted with respect to scope and methods and aid in bringing about co-operation between the survey staff and the schools. In addition there is being organized a committee of prominent laymen who will bring to the survey the benefit of intelligent non-professional judgment. The length of the lists of committee members precludes naming them here, but it may be stated with assurance that they are representative of the most constructive personalities in American education and in other phases of contemporary life.

The staff proper is now being rapidly organized. Besides the usual staff of clerical workers it will consist of two

main types. There will be a number of recognized specialists in fields comprehended by the survey who will give only a part of their time to the survey. These specialists will direct the activities of younger men recently trained in methods of educational research. These younger men will be employed continuously for the period of the survey. By following this policy it is hoped to obtain expert direction for a relatively moderate outlay and by the use of the competent younger men to stretch the resources available to make a more comprehensive survey than would otherwise be possible.

THE SCOPE AND NATURE OF THE SURVEY

The scope of the survey is suggested in the outline which is presented here in abbreviated form. The primary fields for investigation are named in the first "general consideration." Omission of several admittedly important fields was prompted by one or another of two considerations. The training of teachers for secondary schools and problems of finance were excluded from other than incidental consideration because it is being planned to make these separate major problems of investigation under the auspices of the Office of Education in the same way that this National Survey of Secondary Education is being carried on. The explanation for omitting other main fields from inquiry is the limited financial resources at hand for the survey. The total amount available, \$225,000, is not enough to warrant including all important aspects of the whole problem. The group of consultants selected those major fields the investigation of which appeared to be most feasible and timely in the present state of our knowledge of secondary education.

Special attention should be given to the remaining "general considerations" preceding the abbreviated outline proper. They relate to (2) the necessity of integrating the survey in all its aspects, (3) the limitation of investigations largely to public secondary education,

(4) the need of special consideration of problems of secondary education in smaller communities and rural areas, (5) emphasis on the study of constructive innovations in practice (rather than a study merely of status and trend), (6) exemplification of effective methods of inquiry applicable locally, and (7) inquiry concerning related studies carried on elsewhere, and (8) the essentially co-operative nature of the survey.

All these considerations may be regarded as important, but it seems desirable to stress at this early stage the fundamentally co-operative character of such an enterprise. This co-operative character was first shown in the effort urging Congress to make the appropria-

tion for the survey. It is shown in the committee organization in the set-up for the survey, a set-up which pools the judgments of many leaders, educational and other. It is expressed in the outline of the survey, which is a composite of suggestions and recommendations from many sources. The survey would, of course, be entirely out of the question without the co-operation of those at work in the school. This will at times inevitably impose heavy burdens on administrators and teachers. Plans and procedures will be carefully scrutinized to keep these burdens at a minimum, but no amount of scrutiny can reduce them to negligible proportions.

Outline of the National Survey of Secondary Education

(Abbreviated Form)

GENERAL CONSIDERATION OF SCOPE AND POLICY

1. The primary fields for investigation, as indicated by the following outline are four: (1) the organization of schools and districts, (2) the secondary-school population and related problems, (3) administrative and supervisory problems (inclusive of administrative and supervisory personnel and activities), and (4) the curriculum and related problems (procedures in teaching and the extra-curriculum). Other fields may be recognized, but chiefly as incidental to investigations in the primary fields.

2. These four fields are thus named for convenience in classification only and not on any assumption that they are unrelated. Investigations in any one of these fields should take cognizance of related inquiries being carried on in others. In this way only may it be hoped to achieve the full significance of the specific lines of inquiry as well as to present an adequately integrated report.

3. Because of the limited resources available, the survey will be chiefly concerned with public secondary education. Inquiries concerning private secondary education will be of three sorts, as follows: The relative extent as compared

with public secondary education (See I, A below), the extent to which schools under private auspices are serving as public high schools (I, C), and private secondary schools as places of innovation and progressive practice.

4. In all the fields for inquiry there will be special consideration of the problems of secondary education in smaller communities and rural areas. This will not be a survey of urban secondary education only.

5. The survey will be devoted chiefly to inquiries concerning current efforts to improve secondary education rather than merely to a description of its present status. Studies of status should be made chiefly to provide the background against which innovating practices may be made to stand out. Emphasis on constructive innovations in practice will call for the utilization of all possible methods of locating them, for example, checking lists, follow-up, inquiry of State educational officers and subsequent visitation.

6. As far as possible there will be exemplification of effective methods of inquiry that may, after this survey has been completed, be applied with advantage locally.

7. Before any extended investigation is instituted there will be inquiry concerning related studies. This inquiry will include published studies, unpublished but completed studies made in graduate schools and bureaus of research, and studies in progress in these schools and bureaus.

8. In order to enlarge the influence and usefulness of the survey both while it is in progress and after the report has been published, it will be the aim to secure co-operation of State departments of education; regional standardizing agencies; those in charge of research departments in schools and school systems; administrators, supervisors, and teachers in the schools; departments of education in higher institutions; and the laity. Among avenues of co-operation to be used are: (a) requests for information required in the projects of the survey and (b) the preparation by the survey staff of lists of related problems the investigation of which by research departments, graduate students, and others will serve to widen the scope and significance of the survey.

OUTLINE

I. The Organization of Schools and Districts.

- A. The status and recent growth (1890 to 1930) of secondary education.
- B. Prevalence and distribution of all types of public secondary schools—
 1. Types described by grades included.
 2. Special types of schools, as commercial, technical, vocational, etc.
 3. Additional provisions for education of secondary grade, as night high schools, summer high schools, part-time co-operative plans, part-time continuation schools, other continuation plans, parental schools, etc.
- C. District organizations under which the different types of secondary schools operate.

D. Intensive studies of types of organization of schools and systems—

1. Of newer types in contrast with older types.
2. Of applicability of newer types to situations in which they are not now operative.
3. Of specialized types of schools and of other provisions for education on the secondary level.

E. Study of provisions for secondary education in smaller and rural communities—

1. Study of facilities, limitations, and noteworthy accomplishments.
2. Feasibility of junior high school reorganization.

F. Studies in the articulation of schools—

1. Vertical articulation of units in the school system.
2. Horizontal articulation of provisions for secondary education.

II. The Secondary School Population and Related Problems.

- A. General study of retention and elimination.
- B. Intensive studies of the population of secondary school age in selected areas.
- C. Follow-up studies of graduates and non-graduates in these areas.
- D. Employments available in these areas; training and characteristics required.
- E. Influence of compulsory attendance and child-labor laws.
- F. Student-personnel and guidance practices in schools with well-developed guidance programs.

III. Administration and Supervision.

- A. Regulatory provisions outside the school—
 1. Laws relating to secondary education.
 2. Rules and regulations of agencies established by law.
 3. Regulations of agencies not established by legal authority.

4. Application of survey findings to suggest modification of existing standards and development of new ones.
- B. Administrative and supervisory staff—
 1. Organization and relationships of boards of education, administrators, and supervisors.
 2. Principal administrative and supervisory activities performed.
 3. Intensive study of staff for administration and supervision in those schools and school systems whose practices appear to be significant.
- C. Special problems of administration and supervision—

Note: In the treatment of all of these problems special attention and intensive study will be given to those schools which exhibit in any of these regards suggestive or noteworthy developments, significant or promising procedures, or important deviations from usual practice.

 1. Selection of teachers.
 2. Provisions for individual differences.
 3. Promotion plans.
 4. Marks and marking systems.
 5. Records and recording systems.
 6. Size of class.
 7. Scheduling, registration, and time elements.
 8. Relations of the schools to the public and community.
 9. Textbooks and other instructional materials.
 10. Library service.
 11. Health supervision.
 12. Research initiated by the schools.
 13. Supervision of instruction.

IV. The Curriculum and Related Problems.

- A. Analysis and classification of curriculum research in the secondary field.
 1. Relating to the program of studies.
 2. Relating to major fields of instruction.

3. Relating to needed research.
- B. Study of plans for curriculum revision.
- C. Description of curricula where revision has recently been made—
 1. Program of studies.
 2. Content and procedure in major subject-fields.
 3. Appraisal of revised programs on basis of evidence available.
- D. The extra-curriculum—
 1. Analysis and classification of researches available.
 2. Investigation of practices in schools with noteworthy development.
 3. Special consideration of the athletic situation and of other activities involving inter-scholastic contests.

PROGRESS ON THE SURVEY TO DATE

A word in summary of the progress on the survey to date may not be out of place. The professional committees were first appointed. The Committee of Laymen is in process of organization. The working outline of the survey has been prepared and revised in line with suggestions made. Preliminary inquiries are in progress. These are of two main sorts, (1) the checking lists to city school systems, state school systems, and individual schools; (2) related investigations are being located and summarized. The staff proper is rapidly being organized. Most of the part-time specialists have been appointed. They are now at work on the detailed plans for the phases of the survey for which they are responsible. The selection of the full-time workers has been in progress for some time. The early autumn months should see the entire project in full swing.

THE PROBABLE FRUITS OF SUCH A SURVEY

Much good should accrue from such a survey, both in the better understanding of what our secondary schools are and should be, and in the consequent improvement of practices in them. We

have tried to make clear in the outline that it is not to be a mere study of status nor even of trends, although status and trends will doubtless be disclosed. There will be inquiry after innovation, to be sure, but not on any assumption that all innovations are constructive. Consistent effort will be made to appraise conditions and practices found, as far as instruments of appraisal are at hand. It is worth remembering in this connection that much of appraisal can be accomplished by the study of inter-relationships of the great variety of evidence assembled and analyzed in a project of this magnitude.

There should be no serious disappointment that the survey does not aim at inventing a slogan or discovering a magic word by utterance of which the ideal secondary school may be made to burst suddenly into bloom. We should now be past the stage of experience in

school affairs where we seek a golden concept by contemplation of which we expect to work miracles in reform. The whole educative process is too complex and the way up from mediocre schools to better schools too steep and laborious to permit one to entertain such a simple view of the methods of educational progress. None will realize this more than those in actual charge of the schools, especially if they recall the energy expended to bring the schools up from where they were to where they now are. We are warranted, on the other hand, in expecting from this survey, which may quite properly be regarded as a huge co-operative enterprise carried forward on a nation-wide scale by a great host of laborers in the secondary field, the light on the next steps upward in the development of the American program of secondary education.

Teacher Training Institutions and the North Central Association of Colleges and Secondary Schools*

By W. P. MORGAN

PRESIDENT, WESTERN ILLINOIS STATE TEACHERS COLLEGE

Before beginning the discussion of the topic which I have chosen I wish to state that there is no unusual claim for interest in this topic, but in view of the fact that the list of institutions which are primarily for the training of teachers is to be discontinued soon and such of these institutions transferred to the college list as meet the college requirements, it seems at least worth while to review the connection between these teachers training institutions and the North Central Association in order that all of us may use the wisdom at our disposal in making the adjustment which seems necessary under this plan. For this reason the proceedings of the North Central Association from its beginning have been perused with some care and such points collected therefrom as seem to have a bearing on the case in hand.

The North Central Association of Colleges and Secondary Schools seems to have been conceived in the minds of the members of the Michigan School Masters' Club at a meeting held in Ypsilanti, December 1, 1894, when Principal W. H. Butts of the Michigan Military Academy offered a resolution which was adopted by the Club and which provided that the presidents of the Universities of Michigan, Chicago, Wisconsin, and Northwestern be asked to unite with the Club in issuing a call for a meeting to form an association of schools and colleges in the North Central States.

Invitations went to institutions in ten states including Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa,

Missouri, Nebraska, and Kansas to attend a meeting to be held at Northwestern University on March 29 and 30, 1895, to organize, if deemed expedient, an association of colleges and secondary schools of the North Central States, representative of universities, colleges, scientific schools, normal schools, high schools and academies.

These invitations were signed by Presidents Angell of the University of Michigan, Rogers of Northwestern University, Adams of the University of Wisconsin, Harper of the University of Chicago, and by Principal Butts of the Michigan Military Academy, Greeson of the Grand Rapids High School, and by R. G. Boone of the Michigan Normal School.

Representatives from thirty-six institutions in seven states met at Northwestern University on the date specified in the invitation. Twenty-two of these members were from Colleges and Universities, eight represented High Schools and Academies, two represented Normal Schools, and the others were superintendents and representatives of special schools.

At least two of these representatives are still living—Homer Seerley and George N. Carmen.

President Rodgers called the meeting to order and President Draper of the University of Illinois was appointed chairman and Principal Butts was made secretary. A committee of nine was appointed to draw up a constitution. This committee was made up of five college and university presidents, two high school and academy principals, one normal school president, and one superintendent of schools.

*This paper is the presidential address of Mr. Morgan delivered at the Chicago meeting, March 21, 1930.—The Editor.

The constitution was drafted and presented at the afternoon session on the same day, and adopted. This constitution provided for a membership of such colleges (or universities) and secondary schools, together with such individuals as may be nominated by the Executive Committee and elected by the Association. It also provided that the representation of higher and of secondary education should be as nearly equal as practicable.

Please note that no mention is made of the group to which normal schools belong but in view of the fact that normal schools were active in the association from the first and that President Albee of the Oshkosh State Normal School was a member of this committee it must have been understood that normal schools were included either as colleges or as secondary schools and did not need special mention.

The Committee on Constitution and Nominations reported that only such institutions as had had formal invitations and had representatives present should be listed as charter members. They submitted a list of thirty-six members consisting of twenty-one colleges and universities, ten high schools and academies, two normal schools, two special schools, and a Chicago superintendent of High Schools.

President Angell of Michigan became president, vice-presidents were appointed for each of the seven states represented, George N. Carmen was appointed treasurer, and Frederic L. Bliss of Detroit High School was made secretary. One of the vice-presidents from Wisconsin was President Albee of the State Normal at Oshkosh.

It was decided that the first regular meeting following this organization meeting should be held in Chicago about April 1, 1896, at the University of Chicago, and the two topics for discussion were selected as follows:

1. What constitutes a secondary school?

2. What constitutes a college?

At the meeting held in Chicago, April 4, 1896, President Jesse of the University of Missouri discussed the requirements

for a college but he made no mention of Normal Schools, but a Committee on Legislation, which was to consider the granting of degrees, was appointed. It consisted of twelve members and President George Albee of the Oshkosh Normal was included.

Dr. Homer Seerley, who was president of the State Teachers College at Cedar Falls, Iowa, was present at this first meeting and he describes it in a letter written to me last December as follows: "It was a meeting without any theories or classifications, and there were no attempts to decide the importance of the University, the College, the Teachers College, the Normal School, or the High School, or the distinguished services, relatively speaking, of each kind of administration. Everything was in conference style, and good will and helpfulness were fundamental to the efforts made to get acquainted and be mutually helpful to real co-operative education."

At the meeting held in Chicago in 1897 President Homer Seerley was appointed as a Vice-President from Iowa. John R. Kirk, former president of the State Teachers College at Kirksville, Missouri, attended this meeting and has recently written me as follows: "It was my fortunate lot to become an individual member in 1897 and to attend twenty-eight consecutive annual meetings." "Seerley and I were much together in that association for some twenty years. We seldom saw any other normal school president at the meetings prior to 1910. L. H. Jones came from Ypsilanti once or twice. John W. Cook was in and out a few times. Z. X. Snyder of Greeley attended about half of the time while he was yet living. Seerley and I were on several committees. In about 1899 I became a member of the commission on accredited schools and colleges and held that position fourteen years." . . . "I do not recall any action taken prior to about 1914 that in any way looked towards recognizing normal schools as anything more than junior colleges, which to my way of thinking, meant no recognition at all."

From President Seerley's statement

which is verified by the testimony of others and by the minutes of the meetings of the association, the teacher training institutions have been a part of this association from its beginning but it is also evident that these same institutions had a minority part in the proceedings of the Association. This was due probably to the fact that they were not a type to fit in with the plans of the organization readily. It was discovered early in the work of the Association that these institutions presented a special problem, due to the fact that their curriculums were as varied as the requirements for the certification of teachers in the several states which supported them. Besides, it was quite natural that their efforts to properly serve the states in preparing teachers caused their curriculums to bear the stamp of elementary education rather than that of the so-called higher education.

During this time it happened that many colleges and universities were developing departments or colleges of education, largely for the preparation of high school teachers, but they were generally adhering to the same standards of admission here as in their other departments.

Since the teacher training institutions were required in most states to offer courses for the preparation of teachers to entrants who were only eighth grade graduates and who were planning to teach in the elementary grades, these institutions very naturally were given an inferiority complex, if not in their own estimation, certainly in that of their collegiate neighbors, and quite properly so, it may be added.

In 1897 an important discussion of normal schools arose in an effort to amend the constitution as to membership so that it would provide for two classes of members: first, colleges or universities, and secondary schools; and secondly, individuals identified with educational work within the limits of the Association. In discussing the rewording of this clause, President Adams of the University of Wisconsin said: "The question arises as to whether it is intended to regard normal schools as sec-

ondary schools, or what our duty towards them shall be. . . . I think that one normal school has been recognized here."

Secretary Bliss replied: "There are three that are members."

President Adams asked: "What shall be our duty towards them?" and at the suggestion of the president of the Association made the following statements: "I think we should be agreed and know what we are doing. If it is to recognize the normal schools as secondary schools, that would be one way of admitting them, and on the same conditions that we do other schools not recognized as colleges or universities. I am inclined to think that this is a wise course to pursue and yet I do not know whether the normal schools would regard that as complimentary to them. . . . We should adopt some practical method of procedure.

President Canfield of Ohio University, presiding, said: "I would ask President Adams if he sees any objection to stating colleges, universities, and normal schools, naming them as such?"

President Adams replied: "I should not like that, because it would seem to be an official acknowledgement that a normal school is not a secondary school. In a certain sense it is not, and in a certain sense it is. I have not come to any definite conclusion in the matter. I think at least we should have an understanding which would aid the executive committee in its course, as to whether normal schools are secondary or not. If you would say preparatory schools, normal schools, colleges and universities—that would obviate the difficulty."

President King of Cornell College remarked: "In the original meeting for organization, some normal schools were classed as secondary schools and I have not heard that this has been unsatisfactory to them. The Association seems to be made up of two classes, colleges and secondary schools. Whether there is need of having any larger classification than that I do not know. But if this is satisfactory to the normal schools, it seems to me that the first might be maintained."

Superintendent Daugherty of Peoria,

Illinois, said: "I understand that the words "secondary schools" is very satisfactory. These normal schools have a course of study equal with the secondary schools and are recognized as members of this Association."

Professor D. S. Wright, Cedar Falls Normal School, then said: "We who now represent the normal schools should like to know what "secondary schools" does include. I came here with the understanding that we are secondary schools; we are so recognized, and as the representative of one normal school I am satisfied."

President Canfield spoke as follows: "I understand that from the organization of the Association until the present time, the normal schools have been included under secondary classes and that ruling would continue unless the Association decided to the contrary."

There was some further discussion but no new points were raised and the normal schools were left to be included under the term "secondary schools", as formerly.

Thus the normal schools by consent of their friends were classified as secondary schools and I scanned the records for other statements than the one quoted from Wright, expecting to find a statement from Seerley, Kirk or Albee, but none appeared.

A miscellaneous list of unclassified colleges and secondary schools appeared in 1899 and in 1900. It included the normal schools at Oshkosh, Cedar Falls and Kirksville.

I do not know when Ypsilanti dropped out, but its president, R. G. Boone, signed the invitation for the first meeting as you will remember. In addition there were two other normal schools represented by individual memberships, Winona and Terre Haute.

A commission on accredited schools was provided in 1902, but its accrediting duties were limited to the preparation of a list of high schools within the territory of the Association which were entitled to the accredited relationships. No mention was made of colleges and universi-

ties. The report of this committee gives the first suggestion concerning inspection and provides for a board of five, but provides only for duties in connection with high schools.

In 1905 President L. H. Jones of the Michigan Normal College and Dean A. Ross Hill of the Teachers College, University of Missouri, discussed the question "Should Normal Schools Undertake the Preparation of Teachers for the Secondary Schools?" In these addresses it was brought out that six percent of the teachers in secondary schools had had professional training from the pedagogical departments and schools of education in colleges and universities, while twelve percent were graduates of normal schools. Since fifty percent of the teachers entering the secondary field at that time had had no professional training, every agency should have helped as much as possible. Hence the normal schools should help. Some normal schools had equipment and faculties equal to our colleges and smaller universities. They should train secondary teachers but only a few had courses of study sufficiently extended to give the academic training desirable. Wherever a normal school had courses of academic and professional work of sufficiently high grade, such an institution had a decided advantage over chairs of pedagogy and educational departments in colleges and universities—namely, the equipment for the practical training of these teachers in observation and teaching in the training school.

This seems to have been the first time the right of normal schools to train secondary teachers had been discussed.

At the meeting in 1906 Director Carmen presented a paper entitled, "Shall We Accredite Colleges?", in which he argued for a change in the duties of the Accrediting Committee and the Constitution so that this would be possible. The name of the Commission was changed to read Commission on Accredited Schools and Colleges. This same year the Commission on Accredited Schools published for the first time a list of accredited high schools but no normal schools appeared on it. A miscellaneous membership list

of high schools, colleges and normal schools was also published. It contained only the Cedar Falls Normal School.

In 1908 the Commission submitted a report on Standards for Accrediting Colleges. These standards cover faculty preparation, laboratory equipment, physical plant, efficiency of instruction, size of laboratory, etc., much as is covered by our present standards but neither these standards nor the standards for secondary schools had anything which referred especially to normal schools. At the conclusion of the discussion on the report, it was recommitted to the Commission with suggestions. The five normal schools of Illinois and the Chicago Teachers College were admitted to membership at this meeting but the question of college or secondary rank was not involved although these institutions had been doing junior college work for years and were authorized in 1907, except in the case of two of them, to grant degrees.

In 1909 ten normal schools were referred to the Commission on Accrediting Colleges for report. The schools were Whitewater and Milwaukee, Wisconsin; Mankato, St. Cloud and Winona, Minnesota; Warrensburg and Springfield, Missouri; Valley City, North Dakota; Mt. Pleasant, Michigan; and Emporia, Kansas. The significant thing here is that this matter was referred to the College Committee, not to the secondary committee. Hence the Association must have thought the normal schools were beginning to resemble colleges, but note further that the committee on College Standards made a report at this meeting, a part of which is in the following words: "A standard American College is a college with a four years' curriculum with a tendency to differentiate its parts in such a way that the first two years are a continuation of, and a supplement to, the work of the secondary instruction as given in the High School, while the last two years are shaped more and more distinctly in the direction of special, professional, or university instruction." This definition does not seem to have been influenced

in its wording by the presence of institutions primarily for the training of teachers.

The proceedings do not again include anything that is significant in its bearing on teacher training institutions until 1912, when Section I, Article III of the Constitution is amended to include junior colleges as members. Apparently this has no bearing on teacher training institutions which so far as the records show are still classed as secondary schools, but the committee of three which made this recommendation also gave the following comment: "In making the recommendation the committee has had in mind as institutions of junior college rank such institutions as give two years of work acceptable to accredited colleges and universities of the association as the equivalent of junior ranking, or as representing an equivalent of the first two years of undergraduate work."

"Such institutions occur in the North Central States under the title of (1) college or (2) normal school. In the case of normal schools the committee recognizes the existence of three classes: (a) schools of only secondary rank offering courses for the preparation of teachers; (b) schools clearly entitled to the junior college ranking; (c) institutions ranking as teachers colleges, fully entitled to grant the bachelor's degree. Those of the first and third group are already provided for by the constitution. Those of the second group are not, as are not also other collegiate institutions of recognized junior college rank."

May I say here that this seems to be a definite recognition by this Association that teachers colleges fully entitled to grant the bachelor's degree were Standard American Colleges and yet the committee seems to be more definitely concerned with the division between secondary and junior college work, for it continues: "Our reasons for believing that the institutions in question should have a place in our institutional membership, along with high schools and colleges, are:

1. These institutions belong fairly in the

field which the scope of our work includes.

2. Their work needs to be standardized both to distinguish the junior college work from secondary work and also to determine bases for the transfer of junior credits to senior colleges and universities.
3. Their representation in our midst will lead to a better understanding all around of the purpose and significance of the work which this association is trying to accomplish."

This committee consisted of these men: H. A. Hollister, H. H. Seerley, and George Buck.

This report was approved and ordered embodied in the proceedings whose publication would be considered due notice of amendment to the constitution to come up at the next meeting, at which time it was adopted as proposed.

However, in 1913 the Commission reported that the cases of normal schools and normal colleges then on the membership list of the Association had been laid on the table for one year and the officers were directed to prepare and present a report at the next annual meeting dealing with the matter of an approved list of such institutions. The commission also reported that it had ordered the normal schools and normal colleges now members of the Association to be retained on an unclassified list for one year. This is the beginning of the unclassified list which appeared for 1913-1914 and which has persisted with only one or two interruptions, but which will be discontinued next year. That year it contained the names of five institutions—three in Illinois, one in Iowa, and one in Minnesota.

In 1914, Kirksville was added to the unclassified list of teachers colleges and the list was continued for another year and the accredited list of colleges as well as normal schools was published.

The Commission on Accredited Schools and Colleges recommended that the list of approved institutions be enlarged. It recommended that an alphabetical list of all institutions which continue the education of students beyond

fifteen units of high school work be prepared and that following the name of the institution an exact statement of facts should be set down such as the following:

1. Number of faculty in independent charge of classes.
2. Number of faculty with the degree of doctor of philosophy.
3. Number of matriculated students.
4. Number and type of degrees granted in course.
5. Number of elementary courses of instruction actually given.
6. Number of advanced courses.
7. Number of professional courses.
8. Expenditures for salaries.
9. Hours of class instruction required of members of the faculty.
10. Material equipment.

This list was then to be submitted to the Commission to determine its standards with the facts before it.

In 1915 a list was submitted and the standards were discussed in the light of the data gathered. The following paragraph in the Committee's report is significant: "The recommendation which the Committee makes with regard to Normal Schools would bring into the Association practically all of the state normal schools in this region. There are a few of the newer normal schools in the State of Oklahoma and a few of the smaller normal schools in the northern states that are not recommended because their present income is less than the \$50,000 recommended. The other institutions are recommended by the Committee after careful consideration on the ground that in material equipment, in responsibility to a large body of students, and in acceptance of certain entrance requirements and conditions of graduation, these normal schools are comparable to many of the colleges included in this Association. It is recognized, on the other hand, that the reports of these normal schools show that the faculties of the normal schools are, in general, different in character from the faculties of colleges and universities. It is recognized that the admission requirements differ in the cases of differ-

ent classes of students. Here again attention should be called to the fact that many of the colleges on the approved list support academies as well as academic departments. There is also variation in the requirements for graduation which are accepted in these normal schools. On the other hand it must be pointed out that there are irregular modes of certification in many of the colleges on the approved list. The number of hours of work required of members of the faculties of the normal schools is greater than in the average college. Finally, the courses offered in normal schools are largely professional in character. The fact is not fully recognized in some of the reports made by the normal schools. Favorable action on this recommendation would make it possible to undertake the standardization of normal schools in this territory and would remove one of the most serious sources of misunderstanding with regard to the relation between normal schools and colleges."

Favorable action was taken on all of the recommendations of the Commission and the list of Colleges and Normal Schools was approved as reported.

The normal schools, high schools and colleges were together in the list of members this year, but the list of approved colleges and normal schools was published with statistical information. It contained twenty-seven normal schools, and thus the normal schools seem to have been classified as colleges and not as high schools.

In 1916 a list of the normal schools and colleges which were added was published and a complete list including former institutions was compiled with statistics and published. This list contained thirty-six normal schools.

At this meeting President Felmley gave a paper on a topic which had been assigned him. The subject was: "What is a Reasonable Limit to which an institution may go in enrolling students in the first and second years and yet retain the right to be classified as a senior college." In this address he made the point that the question of the right to

be classified as a senior college does not depend to any very great degree on the number of junior college students enrolled but rather on the quality of work done in the senior college. The ability to do senior college work depends on the actual equipment facilities and instruction available for the upper classmen and whether there are enough upper classmen for a satisfactory senior college organization. A senior college of 100 members and junior college of 1000 members is more satisfactory than a senior college with 25 members and a junior college of 75 members because better organization is possible in the first case if equipment and other requisites are in proportion to numbers for the senior college. Evidently the small proportion of students in the senior college curriculums in the teacher training institutions was being criticized at that time but Dr. Felmley's address must have answered the question at least temporarily for it does not recur for a few sessions.

At this meeting the constitution was amended to include only two kinds of members, institutions and individuals, and institutions thus were not differentiated.

In 1917 the Committee on the Institutions of Higher Education recommended that separate lists of colleges and universities, Junior Colleges and Institutions Primarily for the Training of Teachers be made and the recommendation was approved. Institutions Primarily for the Training of Teachers were recorded in a separate list of forty, and the administrators of these institutions were convinced that such a list would never bring the recognition needed by their graduates to enter graduate schools and began an effort to have these institutions transferred to the college list. This struggle will end happily in 1931 except for the fatalities.

By some irony of fate the list contained that year a sort of appendix in which eleven liberal arts colleges from four states were included under the caption—institutions primarily for the training of teachers.

In 1918, Dean Babcock, Secretary of

the Commission on Higher Institutions, addressed the Association on "Methods Now Being Employed by the Commission on Institutions of Higher Education in Standardizing Colleges." At one point he said: "Last year the Commission voted to divide the group of institutions of higher education into three parts. Please understand that they are all institutions of higher education. There is no endeavor to demote any body from the list. It was simply a method of separating the presentation into universities and colleges; institutions primarily for the training of teachers; and junior colleges." . . . "The second of these groups has now prepared, *by the direction of the Commission*, a set of standards for itself, and those are to be presented in a moment—the standards of institutions primarily for the training of teachers." He evidently does not accept the independent list of teacher training institutions as an indication that they are inferior.

If I remember correctly, the standards mentioned were prepared by a committee of which President Maxwell of Winona, Minnesota, was chairman. The Commission approved the standards and they were later adopted by this Association. Institutions Primarily for the Training of Teachers not only found themselves on a list by themselves but they found that they were put there on basis of a new set of standards adopted for them only. Forty-two members composed this list this year. (The standards have not been revised from that day to this). There is no distinction made between two, three and four year institutions.

Till 1921 the list was continued one year at a time. It then contained 47 institutions. At this meeting a committee to investigate the matter of classifying institutions primarily for the training of teachers was continued and requested to report in 1922. The committee consisted of T. W. Butcher, L. D. Coffman, J. P. Everett, V. A. C. Henmon, and H. C. Minnich. This committee is in some measure the result of a desire on the part of the four year teacher training

institutions to at least have that fact shown in their listing.

In 1922 six institutions were added to the list of Institutions Primarily for the Training of Teachers but ten were dropped for not reporting. Total, 43.

At the annual meeting in 1922 a discussion of Significant Movements in Teacher Training was led by Dean Babcock in which he said: "In the first place I have viewed with alarm the tendency of so many of our normal schools to transform themselves into teacher training colleges and colleges of education, state normal colleges and state teachers colleges, not because these institutions thereby came into competition with the work of the colleges and universities, but the alarm arises from the fact that so many of these institutions seem to be stressing the upper reach of the work and thereby failing to contribute to the stratum of the profession which is most in need of the improved training of teachers."

President Kirk, Hendricks, and Butcher, brought out these points in reply:

1. If teachers colleges were to train elementary teachers only, there is as much need for a four year college course for their training as there is for a four year training course for high school graduates.

2. No teacher training institution has slackened its efforts at all to train elementary teachers. These institutions are adding, not substituting a new field.

3. Whereas six years ago (1916) fifteen teachers colleges offered four year courses, now (1922) there are ninety-one such institutions. This movement is on and this association will meet it now or later.

President Coffman, who was presiding, then said: "We are giving less attention to the training of school teachers than is any civilized country in the world." . . . "As for the expansion of normal schools into teachers colleges, there certainly is no justification for a normal school expanding into a teachers college unless it continues to maintain its primary professional ideals as a teacher training institution." . . . "I

think the time ought to come when we should set certain definite minimum requirements for those who expect to enter the teaching profession, and that we should raise the standards from time to time—and, that four years is not too much although I am quite certain we cannot do that now."

The Committee appointed to propose a plan to classify teacher training institutions is not shown to have made any report by the minutes of the meeting.

In 1923 the definition of a standard American College was revised and "university or technological institution" was added. These were defined as being legally authorized to grant non-professional degrees and thus a barrier against teachers colleges entering this group was set up.

Mr. Butcher, who was a member of the committee on classification for teacher training institutions, made a brief address in which he showed the difficulty of having successful rural curriculums in these schools when such training is not required in the certifying laws. He also stated that the four year graduates from these institutions in 90% of the cases have had from one to five years' teaching experience. He further said: "It means that the teachers college will do what it was commissioned to do years ago by the legislature when it was established, namely, prepare teachers for the public schools, not teachers for any one grade or any one department of the public schools, but for the public schools.

He further said: "No, friends, teachers colleges are not perfect." . . . "We shall have, with the aid of this association, as good standards in these colleges as obtains in any of the colleges. In the meantime let's be patient with them." . . . "The thing to do is to help them at every turn to do what they ought to do in the matter of preparation of teachers."

In 1924, the Commission on Institutions of Higher Education requested authority to appoint an appropriate committee to canvass the distinction between a two year and a four year teachers col-

lege and report to the commission at the next meeting.

In 1925, the Commission brought out the point that some of the teacher training institutions had overloads on their faculty members, were not careful about their entrance records, and were not meeting the standards on practice teaching. It also voted to appoint a committee to confer with a committee of the American Association of Teachers Colleges on the proposed standards for accrediting teachers colleges. Besides it voted to appoint a committee to determine the policy of the Commission relative to the Accrediting of two year teachers colleges and the classification of teachers colleges. The committee had been provided the year before but had not been appointed.

The list of accredited institutions Primarily for the Training of Teachers consisted of 50 names.

In President Hughes' report as secretary of the Commission he said: "It would seem to me that each teachers college should be accredited on a very similar basis to the liberal arts colleges—either as a junior college or as a four year college." "A considerable number of the teachers colleges on our present list are doing most excellent work in a two year course and are making no pretense to do any work beyond this. These colleges certainly ought to be accredited as two year teachers colleges." "There is another group of colleges on the accredited list that is offering both two year and four year courses. They are well equipped to do both, are doing thoroughly satisfactory work both in training secondary school teachers and elementary school teachers. The practice facilities are adequate, the staffs are adequate, and the equipment is adequate. These institutions should certainly be accredited as four year colleges and also as junior colleges." He also spoke of two special deficiencies in these institutions, namely, academic training of faculties, and teaching load.

In 1926 while he was still secretary of the Commission on Institutions of Higher Learning he included a para-

graph in his report headed "Relations of the North Central Association in Accrediting Teachers Colleges," which was as follows:

"A few years ago the North Central Association assumed the responsibility for accrediting teachers colleges, as many students were being transferred from teachers colleges to colleges accredited by the Association and credit was sought. Up to the present time no other agency has assumed the responsibility for accrediting teachers colleges in our area and it has seemed most appropriate that the North Central Association should carry on this work. During the last two or three years the American Association of Teachers Colleges has been working on the matter of standardization and accrediting the teacher training institutions of the country. At the meeting of this Association held this year in Washington, definite standards were set up for accrediting teachers colleges as two year institutions and as four year institutions and a committee was elected to prepare accredited lists of teachers colleges after examination and visitation. The standards adopted by the American Association of Teachers Colleges are very similar to the standards which are being recommended to this Association at this meeting and the committee is directed to prepare a list of accredited institutions by 1928. It would seem distinctly undesirable that two accrediting agencies should pass on the teachers colleges of the North Central area, and I would recommend that steps be taken to place a member of the Committee on the accrediting of teachers colleges of the American Association of Teachers Colleges on the Committee on Review of the North Central Association, with the ultimate purpose of turning over the accrediting of teachers colleges to the American Association of Teachers Colleges, either in 1928 or shortly thereafter."

At the same meeting, after the opinion of the representatives of the teachers colleges had been expressed to the effect that these institutions were dissatisfied with their inclusion in a list headed "List of Institutions Primarily for the

Training of Teachers," a motion was made that such teacher training institutions in the North Central territory "as met the standards of accredited institutions of higher education for colleges" might be accredited by the North Central Association in the regular way as colleges by applying these standards, although these colleges are special institutions and grant professional degrees. This motion caused considerable discussion and was tabled for one year.

In 1927 President Zook, the new secretary of the Commission on Institutions of Higher Learning, made his first report, within which he included the following:

"The entire question relating to standards for teachers colleges will be the subject of a report to be submitted by the special committee named for that purpose. I cannot refrain, however, from expressing the hope that the Association will continue to pursue the inclusive policy which has characterized it in the past. Contrary to the practice of the Southern Association or the Middle States and Maryland Association, this organization has included the teacher-training institutions in the scope of its interests and its accrediting activities. To adopt a policy at this time which would in any wise give these institutions reason to feel that they were not welcome in this Association, would, in my opinion, be a serious mistake. As I understand it, the organization exists for the purpose of promoting the cause of undergraduate education leading to the baccalaureate degree; and while there are other organizations interested in the technical phases of this period of higher education, as for example, the Society for the Promotion of Engineering Education, the Association of Land Grant Colleges, the American Home Economics Association, and the American Association of Teachers Colleges, nevertheless there is certainly a place not only for the correlating influence of this organization but also for its activities as perhaps the most important accrediting agency in the country. In order to fulfill this function, we need the help and

advice of the various interests in all the wide fields of higher education, not merely a part of them. I trust, therefore, that we may solve the problem of accrediting teachers colleges in such a way as to give these institutions the recognition which they deserve."

At this meeting the motion referred to above, which was tabled for one year, was again brought up for discussion, and passed without any serious objection, with the understanding that the institutions in the list Primarily for the Training of Teachers would be notified of their opportunity to apply for inspection under the college standards and be admitted to that list if they so desired, provided they met the standards.

It was also further voted at this same meeting that the officers of the commission be instructed to apply the present standards for teacher training institutions during the coming year, that complete information be placed in the hands of the members of the commission, and the executives of all teacher training institutions in the territory, and that the whole matter of standards for such institutions be made a special order of business at the next meeting of the Commission.

In 1928 President Zook reported that in accordance with the instructions of last year, 21 separate teacher training institutions, all but one of which were included in the list of teacher training institutions for that date, had made application under the regular college standards.

He said that "officers of the Commission had determined to secure, if possible, the services of someone who could inspect all the institutions." "We were fortunate," he continued, "in being able to induce Dr. Charles W. Hunt, Dean of the Cleveland School of Education, to undertake this important duty. Dean Hunt spent two days each at practically all of the institutions."

"At 8 of the 17 institutions inspected, Dean Hunt was accompanied by a member of the Board of Review. In this way unusual care was taken to secure the facts and impressions on basis of

which the Board of Review might make recommendation for accrediting to this Commission."

"In passing, I may remark that in the conduct of these inspections we cooperated with the American Association of Teachers Colleges in their endeavor to establish a list of accredited teachers colleges. Arrangements were made for Dean Hunt to report to both Associations relative to those institutions which the officers of this Commission decided to inspect."

17 of the 21 institutions were inspected. The inspection of the other four was not made. Of the 17 inspected, 11 were accredited and transferred to the college list. Four on the former list primarily for the training of teachers and one newly applying were rejected. Last year three other institutions were transferred from the teacher training list to the standard college list, and one institution making its original application, although a teachers college, was admitted to the college list, making a total of 16 such institutions which are now included in the list of standard colleges.

It may be of interest to you to examine the work of the American Association of Teachers Colleges along with the work of this Association. Last year no institution in the American Association met all of the standards of that Association, but 16 of them were accredited by this Association. At the meeting in Atlantic City last month the American Association found that it had 36 institutions that did meet all of the standards. 28 of these are in North Central territory, and 11 of them have been transferred to the college list of this Association. It further found that it had 41 institutions that met all of the standards but one, that 23 of this group are in North Central territory, and that 4 of them have been transferred to the college list of this Association. Since coming to this meeting of this Association nine teacher training institutions have been transferred from the list of institutions primarily for the training of teachers to the college list, and one has

been returned to the list of teacher training institutions from the college list. This makes a total of twenty-four institutions of this type on the college list. This lacks only four of the number of such institutions which meet the standards of the American Association of Teachers Colleges and are found in North Central territory. These lists are not quite identical. This would indicate that the standards of accrediting are not as far apart as some have thought, especially when it is considered that all institutions in the American Association must meet all of its standard within two years to remain in Class A.

In summing up, then, the transition of the Institutions Primarily for the Training of Teachers in connection with this Association, it seems clear that they started out without any classification. Gradually they grew to be considered as secondary institutions. For a short time they were put on a list by themselves. Then some of them began to do work of a strictly college type, but were included with a general list of secondary schools, colleges and teacher training institutions. Then the teacher training institutions began to show definite tendencies towards a four year college organization and a two year college organization, and the question began to be raised as to the classification of these institutions within their own list, and this in turn resulted in a request that those who could meet the college standards be transferred to the college list and that the other list be discontinued. The process of transfer has been going on for two years, and 16 institutions for the training of teachers have been put in the college list.

A few minutes of discussion seem worthwhile as to the attitude which has been taken by this Association towards such institutions and as to the degree to which the college standards should be imposed in making the transfer.

It is evident from quotations throughout this paper that this Association has always had a friendly attitude towards teacher training institutions and that due to such a feeling it has endeavored to

dispose of them in such a way as it was believed would be most advantageous to them, but with a definite feeling always that they were eligible to membership in the Association, and with a further feeling that they ought to receive the careful consideration of the Association. This attitude must be continued.

The degree, however, to which the standards shall be really enforced in making the transfer of these institutions to the college list seems open to some discussion, and is based on the common practices of this organization in the accrediting of standard colleges. May I refer therefore to a report of the secretary which appears in the March Quarterly of this Association for 1929, and which is based on the triennial reports of higher institutions already accredited by this Association. In that report the secretary shows, in some cases by taking all of the institutions which do not comply with the standards, but in most cases taking the 20 lowest in the group, certain significant things as follows: first, 129 institutions already accredited have in 1927 admitted 3965 students who did not meet the entrance requirements.

Second, 10 institutions already accredited allow graduation with less than 120 semester hours, due to high grades, regular attendance, and other circumstances, which are in no way provided for in Standard Number 3. It was not possible to make that check on Standard Number 4.

Third, the degree to which the accredited institutions are meeting standard Number 5 is shown in a report on the faculty training in the liberal arts colleges for the year 1928. This report shows that only 49.8 percent of the department heads in the liberal arts colleges have their doctor's degrees, and therefore that not more than one-half of these heads meet the requirement of Standard Number 5. It is further shown that only 87.9 percent of the teachers of professorial rank have a Masters' degree.

Fourth, in examining the requirements of Standard Number 6 it is observed that 7.5 percent of the members of the

faculty in the accredited institutions have a load exceeding sixteen hours per week, which is the maximum allowed under the standard, and that of the 20 institutions violating this standard most markedly, the best one has 20.5 percent of its faculty exceeding the load, and the worst one 87.5 percent of its faculty exceeding the load.

Fifth, in considering Standard Number 7, it is observed that only 83.9 percent of the classes in these institutions are limited to 30 students while the other 16.1 percent exceed it and 1.7 percent of the classes exceed even 60 per class. Of the 20 colleges which fall lowest in this group the best one has 25 percent of its classes exceeding 30, and the poorest one has 48 percent of them exceeding 30. The report referred to makes no effort to consider how well these institutions have met the preparation of students for advanced study, nor how nearly they have met the requirements of Standard Number 9, with respect to the curriculum and the efficiency of instruction.

Sixth, while Standard Number 10 not only requires a registration of at least 100 students but has been interpreted to indicate that the institution which has less than 25 percent of its student body in the senior college should be investigated, there were at this time in the list of accredited institutions in the 20 showing lowest in the scale, 8 who barely exceeded 25 percent, 12 who fell below 25 percent, and one which was as low as 14 percent.

This same failure to meet the standards is found in examining the libraries and laboratories of colleges accredited by this Association. These and other conditions which exist show that the present liberal arts colleges which are accredited in many cases do not meet the standards set up for accrediting and in some cases they fall far short in a number of the standards.

I am sufficiently acquainted with the professional attitude represented by the administrators of the teacher training institutions in this territory to know that they do not desire that the teacher train-

ing institutions shall become members of the college list by a process which would, in case another survey were made like that referred to above, throw any large percentage of them into a group failing in a large measure to meet the standards.

On the other hand, I am reasonably certain too that it would be unfair to these teacher training institutions to demand of them that they should in all cases meet these standards by a strict interpretation of the meaning of the standard. In other words, it is my opinion that the administrators of the teacher training institutions desire to have their institutions admitted to the college list or rejected when they apply for such admission on the same interpretation of the standards by which the present liberal arts colleges in the list remain on the list or by which new ones are admitted. The fact that institutions are teacher training institutions and present problems possibly that fall somewhat outside of the college standards ought in no way to militate against their accrediting if they meet the standards. Of course the standards may need to be revised slightly to meet their needs. The teacher training institutions can ask no more than is granted the liberal arts colleges, nor should they be asked to accept any less.

One other point, and I shall finish. The standards in use by this Association for the standard college do not specifically require anything of teacher training institutions with respect to their professional work. Indirectly, however, these standards may be interpreted to cover their requirements. It is the opinion therefore of some of the administrators of the teacher training institutions that it would be to the detriment of these institutions if only such requirements were made of them as cover their academic proficiency, and that in addition to this the standards of the American Association of Teachers Colleges must be applied to them by that Association, in order that their professional standards may not deteriorate. It is my opinion, therefore, in harmony with this view, that this Association should not

admit teacher training institutions in this territory to its college list unless the institutions are accredited by the American Association of Teachers Colleges. If this precaution is taken and if teacher training institutions may be admitted to the college list of this Association with the same strictness and also with the same liberality of interpretation of the college standards as has been and is now being employed in the admission of liberal arts colleges to this Association, the same pressure for improvement when placed upon the former will get equally satisfactory results which the latter yield when it is placed on them.

If most of the suggestions proposed here are taken into account in this ad-

mission of teacher training institutions to the college list, I feel reasonably sure that a very large percentage of these institutions will be able to qualify presently, and that this Association will suffer no discomfort nor disgrace from the fact that such institutions appear on its college list, for the progress of these institutions has shown, by the proceedings of this Association, a clear example of almost unparalleled progress by growing from secondary schools to bona fide colleges of high standing in a period of less than thirty-five years, which is completely spanned by the life of the North Central Association of Colleges and Secondary Schools.

Differentiated Principles and Assumptions Pertaining to the Content of Curricula Offered in Secondary Education*

By J. A. CLEMENT

PROFESSOR, COLLEGE OF EDUCATION, UNIVERSITY OF ILLINOIS

INTRODUCTION TO FIVE-FOLD STATEMENT OF PRINCIPLES.

Guiding principles are always essential in the formulation, and re-formulation of policies and practices in the field of secondary education. This is true in the consideration of methods or techniques of curriculum making, and in the organization and administration of curricula. Any such statement of principles and assumptions ought to be differentiated so as to include a consideration of the following elements: First, *Recognition of educational "objectives" or aims*; second, *the adjustment of the "quality" of the content of materials of instruction to outlined objectives*; third, *the "cooperative formulation" of content out of four sources*; fourth, *the "organization and administration" of curricular materials*; and fifth, *the "relationship" between curricular and extra-curricular activities*. Such differentiation of statement of guiding principles and assumptions will add to definiteness, clarity and meaningfulness of the "program of studies" as a whole. Too frequently, it has been customary to outline a body of principles in undifferentiated blanket-like form. The following five-fold treatment is, therefore, submitted for consideration by educational theorists and by practical school administrators, and by other secondary school officers.

1. THE MAJOR OR GENERIC AIMS OF SECONDARY EDUCATION SHOULD BE RECOGNIZED.

The multiplication of aims or pur-

poses within any organized group of individuals is a natural outgrowth, or at least an accompaniment, of the increased number of interests generated in individuals, and groups of individuals in the midst of our complicated present-day environment—physical, mental, social and spiritual in nature. The aims of all social organizations in existence have been expanded and enriched during the last few decades, wherever worthy causes have been involved. *The school ought not to lag behind so far as it now does, in making desirable adjustments to changing conditions that are consequential for the good of society and its members.* In the attempt to realize the desirable ideals of present-day civilization, the secondary division of the school system should bear its share of the responsibility, and make its corresponding contributions. *The aims, therefore, of the organized institution known as the school should not be built up apart from the ideals recognized in civilization at its best, during any one generation or other.* During the last few decades, the modern secondary school has been attempting to determine with considerable clarity its outstanding major and subsumed aims. It should be frankly admitted that, up to date, these aims have been determined chiefly through "reflective thinking," and not through controlled and "systematized experimentation." Such experimentation, it is to be hoped, will, in the near future, become more and more possible and customary. The fact, however, that these objectives have not as yet been determined, experimentally, should not lead critics to assume that all of the reflective effort so far expended has been wholly void

*A paper read before the Commission on Unit Courses and Curricula, in Chicago, March 20, 1930.—The Editor.

and unprofitable. Despite the fact that "controlled" experimentation has not furnished the chief basis for determining these expanded purposes or objectives, these purposes do now actually correlate, in theory, more closely with the desirable factors of civilization than has ever hitherto been true in the history of secondary education.

(1) *Aims Should be Determined by Analysis, and Evaluation of Ideas, Activities, Attitudes, and Ideals.*—The major or generic aims of secondary education should be determined by making an analysis, and, also an evaluation of the "ideas" employed by individuals and groups of individuals when mentally at their best; by an analysis and evaluation of the many varieties of "activities" engaged in by individuals; by an analysis and evaluation of the "attitudes" of individuals most wholesomely expressed; by an analysis and evaluation of the "ideals" most worthy to be realized by civilization as a whole, during any one generation or other. Such analyses and evaluations must necessarily be made, predominantly, under existing present conditions, but not wholly, of course, in non-recognition of the past worthily expressed ideas, activities, attitudes and ideals, nor in ignorance of their possible future actualization and significance. *The conditions existing now must be used for passing judgment either upon past or future curriculum theories and practices.* In the name of "historic-mindedness" the relationships between the past, present and future educational aims and the corresponding conditions must be considered. Furthermore, as above intimated, not all activities, attitudes and ideals can be regarded as having equal weightings. Some ideas and activities, as well as some attitudes and ideals among individuals are more desirable than others. Evaluation must, necessarily, always accompany analysis in any attempt to determine a "set-up" of secondary school objectives intimately correlated with important factors or elements to be found in civilization as a whole. This statement represents an important educational tenet, both

theoretically and practically considered.

(2) *Classroom Teaching Objectives Should Represent Subsumed Major Objectives of Education.*—The objectives of classroom teaching should represent subsumed aspects of the major objectives of secondary education as a whole in order to avoid the assumed "dualism" of aims that has often been thought of as existing between major and specific objectives, on the one hand; or on the other hand, the antithesis between the general objectives of secondary education as a whole, and between the objectives recognized in the teaching of the different subject groups as such. This is to say, that the aims of classroom teaching should represent amplified aspects of the major secondary school aims. Or again, in other words, *the aims of classroom teaching, used in connection with the organization of the experiences and interests of individuals, should represent differentiated aspects of the larger, and more inclusively stated aims of secondary education.* This statement is stressed, as was indicated above, because it does not appear to be justifiable for instructors of the different subject groups to set up one body of disparate objectives, and for educational theorists interested in the whole of the secondary school process to set up another body of objectives.

2. ADAPTATION OF THE CONTENT OF THE CURRICULA TO THE CONTINUITY OF THE LIFE INTERESTS AND MEANINGFUL EXPERIENCES OF INDIVIDUALS, AND GROUPS OF INDIVIDUALS.

(1) *A Correlation Should Exist Between Objectives and Curricular Content.*—*The reason for outlining a list of major, and also of the subsumed or amplified educational aims is that these may serve as the chief criteria for selecting the "quality," or kind of curricular "content" that is to be used in the schools.* This is to say, that materials of instruction offered under the different subject group departments should be formulated in harmony with the avowed aims set up both in generic and in more amplified form.

(2) Again, the nature of the content of materials of instruction should represent continuous and unified cross-sections, and segments of all the varieties of the fundamental, and, desirable and significant modes or types of human experience in past, and present-day civilization. The inevitableness of this tenet is, in part, due to the increased range of experience growing out of the overwhelming contribution of science and invention during the last half century.

(3) Moreover, the content taught under the now organized so-called subject groups should include the "practical" interests of individuals as well as the "academic" knowledges, interests and ideals. Practical or industrial arts and fine arts should be regarded as complementary, not in opposition to the academic or so-called "solid" subjects. Certain of the earlier modern philosophers argued against the validity of "disparate," disconnected experience because of its dearth of "meaning." Analogously speaking, vigorous protest should be made against "disparate" school experience, mechanically vivisectioning school studies into "academic" and "practical," regarding the former as significant, and the latter as non-significant. Both should be regarded as a part of unified experience of individuals. The proportionate amount of emphasis to be given to academic, and to the practical arts phases will need to be determined, in part, by the purposes of the local institution or institutions in question. In any instance the first consideration of the secondary school level is to be given to a broad "general training" and background, much of which, for want of a better name, may be thought of as cultural in the modern sense, inclusive of much more than merely classical literature foreign and the vernacular. The modern student is entitled to an educational heritage from each of the varied significant segments of past and present-day civilization. Little justification exists for "compartmentalizing" subjects merely on the ground that the academic are more worthy of pursuit than the practical.

Philosophically and educationally considered, "academic" and "non-academic" subject groups are both vital elements in civilization.

(4) And lastly, it should be recognized that certain organized experiences, interests and ideals are, comparatively speaking, "permanent" in nature and that others are more ephemeral and "changeable." Among these, one of the most unchangeable subjects as to content of subject matter is that found in the case of mathematics. This is to say, that many aspects of the content of mathematics remain permanent. It is part of the school's business to assist instructors and pupils in observing those aspects within the curriculum pabulum which will be of most consequence to them in the realization of worthy objectives or aims set up in teaching. In other subject groups, as for example, language including both foreign and the vernacular, and natural science, there exist many relatively permanent important elements or factors. In case of any language, certain structures, peculiar to it, need to be recognized. In case of the natural sciences, certain fundamental laws cannot be ignored when pursuing its subject matter without greatly handicapping the student in his later pursuit of it. On the other hand, in some aspects of these so-called more "solid" and stable academic subjects, as well as in the "newer subjects," certain subject matter is relatively more changeable in nature. No argument should be needed to show that this is true in the field of the social sciences, for example, or in the field of industrial and practical arts. *To attempt to determine so far as possible what curricular aspects can be considered as relatively permanent, and what relatively, changeable is as worthy a problem for consideration in the field of the philosophy of the secondary school curriculum as was true in the past in the field of the "history of philosophy" proper, in which instance the attempt was to try to determine, "reflectively," what part of the world's phenomena is "Being" and what part of it is "Becoming"—or in other words, to determine what part of physical, and men-*

tal, and social phenomena is relatively unchangeable, and what part is relatively changeable. Openmindedness, not dogmatism, is essential in passing judgment upon the "relatively permanent and changeable" aspects of curricular content.

It is a part of the business of the secondary school to attempt to select and organize its materials of instruction in the light of both the relatively permanent and fundamental, as well as in the light of the relatively changeable and passing ideas, interests, needs and ideals of individuals and groups of individuals. It is essential that a balance be maintained between the conservation of the basic permanent factors, and between necessary adjustments to new interests based upon both "experimental objective investigation," and upon the more "intellectualistic reflective" type of inquiry. The fact should not be overlooked, that reflective thinking" including the realm of mathematics and philosophy, for example, can lead to new interests and discoveries as well as can the "objective laboratory" method of investigation. This tenet is especially important when taking into account long periods of time "in the history of thought," and in the "history of education" as such. Schoolmen as well as other institutional leaders should not lose sight of the fact that, what appears to be absolutely permanent and important, during one generation or more, may become relatively unimportant after the expiration of successive generations. Illustrations of this fact may be found, even in the field of natural science, in which instance knowledge and facts are comparatively highly stabilized and standardized. To re-iterate, then, a fundamental statement, *it is important in the name of a sound philosophy of the curriculum of the secondary school, to give attention to both the permanent and the changing aspects of curricular content, whenever considering several generations of time, a half-century or a century more or less.* This remark has considerable pertinence in the light of the fact that the public high school of Amer-

ica has passed only a little beyond the first century of its existence, (1821).

3. THE CONTENT OF CURRICULA SHOULD BE CO-OPERATIVELY FORMULATED AND BASED UPON A VARIETY OF SOURCES.

(1) *Formulation of Curricular Content Should Represent the Intelligent Co-Operative Effort of Many Individuals and Groups of Individuals.*—Ideally, curriculum and course of study making should represent the conjoint efforts and product of qualified counselors; of trained superintendents, principals and supervisors; and of competent instructors employed in the teaching of the different subject groups. Now and again, it may be possible to find members of boards of education and also lay-members who are willing to give a sufficient amount of study and energy to make some contributions. Educationally, the above position can be justified on the ground that this co-operative procedure is likely to represent more inclusive interests of all human beings of all times than is likely to be true in case but a very limited number of individuals participate in such formulation of curriculum pabulum. This assertion does not imply, of course, that merely the greater number of individuals co-operating in curriculum formation will guarantee superior quality of work over that done by a small expert group. Administratively considered, certain "limitations" at once occur, namely, the problem of financial expense incurred in case each school system should attempt to reorganize its curriculum or curricula, and, again the problem of the equal competence of all persons employed in local school systems to participate. On the other hand, certain administrative "virtues" occur to one, namely, co-operative participation is likely to acquaint instructors first-hand with the details of the content of curricula, and again as a partial result of this, tend to motivate as well as increase the efficiency of instruction in school systems as a whole.

What shall be the exact balance between the local "coloring" of the cur-

ricular content and those aspects presumably of more universal concern to all communities, and how shall this perspective be maintained? This cannot be answered dogmatically when considering the above co-operative-like policy. Both phases, however, should be recognized in due perspective. Curricular content should not ever be determined, chiefly, by "geographical" or "political" boundary lines. "Community of ideas," "activities," "interests," "needs" and "ideals" rather should be the determining factors. Physical boundaries are always to be regarded as mere conveniences and subsidiary to solidarity of mind and spirit. This implies, of course, that in some instances, subject matter common to any and all communities should be recognized, and that in other instances, local situations will call for some variation of content adapted to the needs of respective schools.

(2) *Materials of Instruction Should be Based, Primarily, upon Four Sources.*—In the first place, authentically and adaptably written "textbooks," reference books, periodicals, and other "printed" content, obviously, will always serve as the largest source of materials of instruction to be used in the secondary schools. Educationally, this can be justified on the ground that significant, racial and individual experience can best be epitomized in this manner. Whenever "textbooks and other printed subject matter" are used and taught so as to represent the essence of concentrated meaningful human experience, ideas and ideals, then this source represents an incalculable racial and social heritage. The chief desideratum is not the elimination of textbook and of other reference book materials, but rather the problem of the adjustment of printed materials of all kinds, to the real capacities, needs and interests of pre-adolescent, and adolescent-minded individuals.

Whether one or more than one textbook shall be used in the teaching of respective courses is an administrative and supervisory problem that must be solved in the light of varying local conditions, and in the light of the nature of the

methods of teaching used. In case the "laboratory method" of teaching is used in English or in social studies, then, clearly, this necessitates the use of more than one textbook. In any event, it should be clear that textbooks and reference books will, of necessity, always occupy a major position as one of the sources of materials of instruction to be used. In order to avoid slavery to textbook use other sources of materials of instruction should be used.

In the second place, too much emphasis cannot be placed upon the wise "choice" and "use" of concrete supplementary equipment and supplies in the "laboratory" aspects of the different subject group departments, and in the other departments wherever physical materials or "apparatus" is necessary to satisfactory instruction. This inclusion of supplementary aids other than book content under the materials of instruction has been subscribed to by a number of other writers. And at this point, a considerable overlapping occurs between the problem of the curriculum, and supervision of instruction.

In the third place, *copious use should be made of all kinds of helpful "illustrative materials."* Sometimes, this may take the form of the narrative or "story"; at other times the legitimate use of "comparisons and analogies"; at other times, the use of models, pictures, slides, photographs, drawings or other classroom helps. This aspect will, of course, at certain points, overlap with the other two sources above mentioned. But in this third type or source, the story and narrative hold a relatively large place including a great variety of all imaginable kinds of helps which instructors can supply for classroom use. In case of both the second and third sources pointed out above and stressed, "the psychology of the relation between the concrete and the abstract" is involved in the learning process of pupils. Suffice it to say, at this juncture, that for all human beings, adults as well as adolescents, concrete experience furnishes a fundamental basis for the fuller realization and appreciation of the abstract and reflective ele-

ments or processes. True, the exact proportionate degree or place will vary among individuals. *Both quality and quantity of concrete experience are important as "propaedeutic" experiences for doing more abstract reasoning on the part of learners.* Clearly, it has been necessary to trespass a bit upon the problem of "methodology," or the way of presenting materials of classroom instruction here, in the comment made upon the "kind" of content involved in materials of instruction. But in practice it is impossible to separate problems of method and the curriculum.

In the fourth place, an important but less formally organized source is available. *The "meaningful experiences" of both instructors and of pupils acquired from foreign and domestic travel, or from close observations made of the lives of people as it is lived at its best, or from close observations of the world of physical phenomena all about us, should supplement the other three somewhat more thoroughly organized materials.* Some of these fruitful experiences will be found to be too new to be fully expressed in textbook form, each year in each of the subject groups some phase or other having been passed through by instructors and students. Furthermore, certain aspects involving what, for want of a better term, may be thought of as "spiritual content" are difficult to put in black and white, and yet are so essential in giving life and force to content that they cannot be wholly ignored.

Selection and organization from this fourth source of *"living experiences"* should be used to supplement the other three sources, and, partly for the reason given above, namely, that some of them will be found to be so current that they will not yet have been formally organized under any of the other three sources. One result likely to accrue from the recognition of this fourth source is the somewhat intangible, yet important factor thought of as humanization and motivation of teaching. Travel has always been regarded as an asset that is invaluable to teachers in the fields of the English language, or the foreign languages,

or in history and the other social studies. While this will depend in some measure upon the person who travels, yet it is likely that, all in all, the teaching of those with wideness of experience will be superior in type as compared with the individuals who have not had this variety of "contacts." This granted the fact should not be overlooked that scarcely any subject group, either of the academic or the non-academic type exists, in which the argument cannot be made equally strong in the support of the necessity for as wide a range of "consequential contacts" and "broadening of interests and experiences" as possible. Witness, for example, the increasing possibilities in the field of natural science during the last quarter of a century or more, or in the field of fine and industrial arts. Obviously, the variety of contacts at home and abroad, and the observations possible for the enrichment of classroom materials of instruction are far from a negligible factor in present-day curricular content, one of the important desiderata always being *"live-wire"* knowledge. In this instance, of course, precaution is necessary against mere "assembling" of unorganized "parcels" of information. But this precaution is applicable to the textbook source, too, is it not?

In the light of the consideration of these four sources of materials of classroom instruction, it would appear to be quite pertinent to reconsider with seriousness the so-called trite problem of Spencer, *"What Knowledge is of Most Worth,"* or the problem of a long list of educational writers in the field of methodology, *"What to Teach."* One purpose of this discussion is to stress the idea that in the midst of so rich an environment as that of our day, including important heritages of the past, it is very important that the selection of the highest *quality of content* be given its due share of consideration. And it is difficult to see why any one should even tend to doubt the ponderousness of this assertion or position. The real curricular issue is not *"quality"* of content *versus* *"quantity"* of content but *quality of content in*

relation to quantity of content in secondary school instruction, in the light of the expanding interests and aims, purposes of present-day civilized life.

4. CONTROLLING PRINCIPLES IN THE ORGANIZATION AND ADMINISTRATION OF CURRICULAR CONTENT.

The materials of instruction which represent common, similar and integrating interests of individuals should be predominant in grades 7-8-9. Increasing attention should be given to the differentiated needs, interests, and capacities in the work offered in grades 10-11-12, and wherever junior college work is offered in grades 13-14. In the first six grades, attention should be given primarily to common needs of pupils. Gradually above the seventh grade, a limited amount of attention should be given to beginnings of manifestations of differentiated interests of pupils, by providing suitable materials of instruction and suitable methods of instruction. Still further increasing recognition should be given to these gradual differentiations of materials of instruction during the last year or two of the senior high school division, and on into the junior college division of secondary education. Of course, ideally and theoretically, this is warrantable in our continuous ladder of elementary and secondary education in America. In practice, the gradual transition from provision for common interests of pupils to differentiated is often difficult because not all individuals come to the seventh grade level or to the tenth grade level, or to the thirteenth grade level of secondary with equal previous training and preparation. For two reasons, gradual differentiation, however, of content is desirable: pupils differ in inherited and acquired tendencies; and also environmental activities of life are differentiated. In any event, the transition from provision for a "common body of interests" to that of "differentiated interests," as provided for in materials of instruction offered, should be gradual and not abrupt. "Divisions of the school system are made necessary by the exigencies of administration. They are

to some extent made desirable by the fact that many pupils leave school before the complete course is covered."

(1) The materials of instruction offered should be made to correspond to these divisions.

(2) *Administrative Provision for Constants and Required Work.*—Administratively considered, it is necessary to make provision for a certain amount of work required of all individuals. One way of making such provision is through offering what have been called "constants" in contrast to "electives," with different kinds of organized curricula in large, medium-sized and small schools. In this way mere scattering and, sometimes resultant smattering of work pursued by pupils can be safeguarded. "Constants" or "required courses" should represent those elements which were previously spoken of as necessary and justifiable common interests of individuals. The "relative" amount of required work should decrease "gradually" from the seventh to the end of the twelfth or fourteenth grades, and correspondingly, the "relative" amount of elective work allowed, should "gradually" increase from the beginning to the end of the secondary school division of education. Obviously, "free" electives during any stage of "secondary" education would be unwarrantable.

(3) *Correlation of Work Simultaneously Offered in Different Subject Group Departments.*—Only for convenience of organization and administration is it ever really justifiable to classify separately the content to be taught under different "subject groups." But once this is granted, then every effort should be made to correlate and unify the closely related aspects of subject matter offered under different subject groups. Such co-ordination should not be left to mere chance. The pupil is too immature of his own accord to make this correlation without assistance on the part of instructors. And instructors because of their enthusiasm for their own fields are likely to

(1) Inglis, Principles of Secondary Education, pp. 296-297.

under-emphasize necessary correlations with other fields. Such correlations need not necessarily be mechanically and perfunctorily made. Nor should these coordinations be delimited to but one or more departments. *The exigencies of present-day situations demand that a wide variety of correlations be made at whatever point or points, it will increase the significance and "meaning" of what is taught and learned.* These correlations should be insisted upon educationally because of the natural unity that exists between different realms of human knowledge and experience, and should be insisted upon, administratively, because no department can exist unto itself with greatest effectiveness, for teachers and learners. *Correlation which represents a richness of a great variety of elements will tend to break down formal and meaningless mechanical divisions of subject matter often found to exist under the name of isolated "departments."*

(4) *Progressive Arrangement of Materials of Instruction.*—The progressive or "sequential arrangement" of the content of materials of instruction should not be overlooked in the organization and administration of subject matter upon the different grade levels from the beginning of the junior high school to the end of the senior high school, or junior college. Such gradation of materials implies the recognition of increasing abilities and capacities of pupils throughout the successive levels of secondary education. Naturally, the difficulty of content to be studied should be simpler in the seventh than in the tenth grade, or in the tenth than in the twelfth or fourteenth. Moreover, the varying abilities and capacities of different "groups" of pupils will need to be recognized as well as merely individual differences. *These factors involve the problem of arranging subject matter in terms of increasing differing abilities, as well as in terms of increasing like abilities of pupils on successive levels of secondary education.* The progressive and sequential arrangement of the content of curricula and courses of study in terms of increasing difficulty of mastery represents a prob-

lem of serious consequence, and is more difficult to carry out in certain subjects than others, partly because of the nature of the subjects themselves. Both "duplication" of essential materials and "elimination" of non-essential materials are involved in formulating this transitional aspect of progressive arrangement of what is to be taught. In some respects, this procedure represents a "non-stop flight" through the full course of secondary education as opposed to the so-called traditional "tread-milling," with reference to the learner.

(5) *Teaching Units with Large Central Themes and Ideas Versus Disparate Tid-bits of Knowledge and Experience.*—The organization of divisions and sub-divisions or topics of human knowledge and activities for suitable classroom presentation has occupied schoolmen for centuries. Purposes and aims of one kind or another have always, in some measure, either directly or indirectly, determined the nature of subject matter taught in any one generation or other. Illustrations of this fact under the earlier and later Christian schools, before the seventeenth, eighteenth and nineteenth centuries, and under the regime of secularized schools in the history of education are copious. It is beside the point to argue that only in current times have we begun to organize subject matter into teaching units, at all, of any kind. At the present time, the crucial problem is rather, can the most suitable teaching units of subject matter be improved upon and organized with greater profit than has hitherto been the practice? Extremists have, on the one hand, in the past held that all page assignments are vicious. Others have contended that all assignments must be made in topic or modified-topic form. Some persons have recently contended that large topics having many sub-divisions rather than miscellaneous chosen tid-bits of knowledge and experience should be used. On one point, at least, perhaps, all modernists will agree, namely, that the materials of instruction offered under courses of study and curricula cannot be merely randomly assembled.

On a second point, most educationalists and practical schoolmen will probably agree, namely, that the amount of linear space, or page area given to any topic or theme does not necessarily determine the amount of time to be given to such topics in classroom work. It is imaginable that, frequently, a very important idea may be put in quite an epitomized form in print. Furthermore, *it ought to be possible to agree on the fact that the significance of content to be taught will need to be determined in terms of the purpose for which anything is to be taught, and, secondly in terms of the relative significance of the purpose or purposes set up.* Resolved into a single statement, this implies that content when taught should have "definite meaning" relative to "consequential purposes" to be realized in present-day civilization. This assertion implies a further assumption, namely, that the selection and organization of so-called unit topics of teaching is an unending process never completely finished and fixed or static.

5. THE AMALGAMATION OF SO-CALLED CURRICULAR AND EXTRA-CURRICULAR ACTIVITIES.

If it be granted that education both formal and informal is life itself, and that it continues in some form or other, up to, and happily in some instances beyond, the age of three-score and ten, the supposed "dualism" or "hiatus" between "curricular" and "extra-curricular activities" appears in large measure to be ill-founded, or ill-grounded. On the other hand, the contention that activities outside of the class room should be reckoned with in the light of the full educational career of an individual appears to have an increasing justification. After all, it is but the earlier problem couched in different terms, namely, the relative potency of informal and formal education. He, of course, is a wise man who can tell without error, whether the instruction received by an individual student in some English class was more effective than the effort put forth by the same individual pupil in attempting to organize

his own arguments effectively or effectually in a tryout or final "debate" of some secondary school system; or whether the instruction from the music or art teacher proved to be more forceful and meaningful and productive than the competitive try-out in some so-called "extra-curricular" activity, well organized within the school; or whether the results of teaching in some academic or solid subject proved to be more stimulating and productive than the motivation received in something done under the name of some "subject group club," away from and outside of the classroom work as such. It would, again, seem to be fortunate if we could "school" ourselves in the midst of our wealth of ideas, activities interests and ideals of present-day civilization in thinking not too highly of merely "compartmentalized" human knowledge and experience. *How much more consequential it would be, theoretically and educationally, if we trained ourselves to think in terms of the great and significant differentiated modes of human experience, namely—language experience, history and social studies experience, natural science experience, mathematics experience, music and fine arts experience, health experience, and finally play experience.* Under such a regime organized and systematized "formal" school experience might then represent interrelated meaningful parts and unified parcels of life as a whole, of civilization, intact, in all of its varied and desirable aspects. Then, education and schooling would not be thought of as two separate processes, nor would the present hard and fast classification of curricular and extra-curricular activities be warrantable or defensible. The exigencies of our day may at present require this distinction, administratively considered. But a genuine philosophy of the secondary school curriculum makes it foolhardy to think of life's fundamental interests and experiences being "amoeba-like sub-divided" into so many non-related entities, whether they represented highly demarcated "subjects" to be studied, or whether they represent "extra-classroom" activities.

6. CURRICULARIZATION AND CIVILIZATION.

Our mere worship of "school subjects" as "ends" in themselves has inevitably led us to an "over compartmentalization" of education. Shall this go on at the expense of "integration" and "synthesization" of ideas, activities, attitudes and ideals, without end? Will it be necessary or not to begin "de novo" in the midst of environing conditions and experiences and problems of civilization as a whole, recognized to be different in hue in some respects than those of a century or less ago? How high or big will the curriculum "cumulus" need to become if subjects without end, are to be added as mere "accretions"? Is there no possibility of organizing the content of materials of instruction in such a way as to have them represent significant aspects of civilization and experience at each level of an individual's educational career? Are not linguistic, social, natural

science, mathematics, industrial and fine arts, health and genuine play ideas, activities, attitudes and ideals as representative factors of the fabric of the best of the civilization of one generation or other more to be desired than the mere worship of fossilized facts: *Curricularization of school life is intimately connected with the process of civilization as a whole.* More than mere encyclopedic organization of knowledge is here involved, though this element cannot be wholly ignored. Accumulation of vivisected school subjects and courses bid fair to defeat the possibility of developing in students the ability to integrate, to generalize and to synthesize human experience which should include all of the desirable kinds of ideas, attitudes, activities and ideals that are represented in civilization at its best, including past, present and probable future conditions of thinking and living as a whole.

College and School Athletics*

By HOWARD J. SAVAGE, STAFF MEMBER

CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING.

I shall make this morning no attempt to justify or to defend college and school athletics. None is needed, and he who would take such a course before an association that has the prestige and the record of accomplishment of yours would be wasting his breath. One who attempted thus to defend college athletics would be only attempting to justify muscular movement in man, the love of competition, and the pleasure that comes from doing anything well. Such aspects of life and human relationships need no defense, for they are a part of the natural heritage of youth.

Nor shall I attempt to advocate the curbing or repression of college athletics in their broader aspects. The day for that sort of thing has long passed. With your permission I shall lay before you certain notions regarding the guidance that should be afforded to college sport if it is to play its part in American higher education.

It was an officer of this association who noted that the relation of colleges and universities to regional accrediting bodies such as yours is complicated by a reluctance to acknowledge defects in the handling of athletics at individual institutions. From one point of view it may seem curious that, although administrators are ready to admit deficiencies in curricula, in the training of their teachers, in library facilities, in laboratories and provision for research, as well as many other matters, they appear reluctant to admit that their administration of athletics leaves anything to be desired. College athletics are the tenderest spot in our whole structure of higher education, whether respecting in-

ter-collegiate relationships or local educational problems. Reasons for this tenderness are to be sought in the public relationships of the college, a proprietary attitude on the part of alumni and townsmen that may have been originally fostered by administrators themselves for quite other purposes, and the fact that, while one might experience some difficulty in leading a regular 'varsity long cheer for a curriculum or for a method of teaching, any successful athletic season may arouse the most fervent expressions of loyalty and enthusiasm.

Even the most casual inspection of the field will indicate that, although all may not be well with college sport, it has improved measurably in its every aspect during the past quarter century. Indeed, one may go farther and say that in the last five years the improvement has become most marked. This recent progress has been due to a quickening realization that sport can be made ancillary to the whole process of higher education. For this very reason further improvement becomes imperative. Now, if we were to examine in some detail the less pleasing aspects of athletics, we should be justified in concluding that the principal causes of the deficiencies often are the activities of older persons. Although I am unwilling to defend the thesis that college sport should be delivered root and branch into the hands of undergraduates, I nevertheless believe that undergraduates of the future might well have a wider share in it, merely as a recognized part of the educational process. The country over, there is ample justification for the notion that the more intelligent the athletic guidance afforded by elders, the more are youngsters led to solve their problems for themselves, and the greater

*An address delivered before the Commission of Higher Institutions, in Chicago, March 20, 1930.

the lasting benefits that accrue to them.

As a major premise, therefore, we can all agree that, whatever be taken to be the end and the aim of education, at secondary or college levels or at both, wholesome sport is a part of the contributing process and ought to be furthered. Whether the college be regarded as primarily an intellectual institution or as a socializing agency, makes no considerable difference to athletics. These two aspects of educational theory are not by any means mutually exclusive; I for one can see no lasting good from attempting to socialize anybody without enlisting his intellectual capacities, or from cutting off the recreative physical activity of a potential intellectual giant. In short, between these two educational points of view there is no real conflict. Differences arise, if at all, concerning the means of arriving at these ends. In any case, if education is to benefit the individual, its results must be tested by its effect upon him. The effect of athletics upon bodily wellbeing at present is, and probably will continue to be, problematical. In our study of American college athletics we came upon a minimal number of institutions where physical improvement in a group could be demonstrated as coming directly from participation in athletics. Yet, although we set aside for the moment this aspect of physical education and athletics, we can still emphasize their moral and ethical values, and this emphasis can be reasonably, if perhaps not scientifically, justified. Assuming, then, that athletics are to contribute their share to the educational process, we shall find no way to evaluate them save by their results upon the individual boy or girl, young man or young woman.

The problems presented by the school athletics, on the one hand, and by college athletics, on the other, show many points of similarity. Much the same is true concerning the academic aspects of the two educational levels. But these similarities ought not to mislead us into an assumption that the solutions for these problems at the college level are identical with those that are yielding

such excellent results at the school level. The facts of individual lives indicate that at different ages play takes on a different significance. Observe the apparently meaningless motions of a child of six. His play is spontaneous. He is impelled to it by forces that he does not recognize, and he indulges in it until he is ready to drop with fatigue. By the age of sixteen a purpose will have come into his play. Adolescence is a period of emulation, of group loyalties, and of a play-motivation that, compared with earlier days, is distinctly purposeful in its relationship to the group. Those childish impulses that actuated the youngster of six have not been eliminated but adapted to adolescent ends. By the age of thirty-six they have further changed. Loyalties have altered. What at this age is often termed "play," is principally individualistic in purport. Activity is still a means to an end, but usually the end is consciously adopted and deliberately served. In our academic curricula we recognize the bulk of this group of changes. To athletics and sport we should accord a similar recognition.

In many respects, school athletics of today are in a better state than college athletics. Habits of regular exercise among school boys and girls are far from uncommon. The responsibility of the pupils for games and the technique of participation and management is deliberately fostered in numbers of schools and school systems. Just as, on the academic side, school performance largely determines the achievement of youth at college, so the merits of school sport will have a salutary effect upon college sport. We cannot avoid this if we would. The youngster whose school athletics have in a measure satisfied his wish for power will not readily relinquish it to coaches and graduate managers when he reaches the university. The improvement that school athletics have manifested in recent years has arisen from their administration as a part of the school system and the school curriculum, from provision of suitably skilled teachers, from the acquisi-

tion of playing space, from a suitable grading with respect to difficulty, and from administering school athletics for the benefit of the individual boy or girl and not as a public amusement enterprise, from keeping school teams as school teams and not permitting them to become town teams,—in short, from maintaining school athletics as an integral part of school life and focusing attention upon the welfare of the individual pupil. Though these be large claims for school athletics, they are as a whole justified respecting a few state educational system; they are being approximated in a greater number; and they are future goals for still others. Mr. James Edward Rogers has pointed out that today athletics are coming to be administered as a school subject through school budgets under the control of the health and physical education departments of the school system. Perhaps a score of cities, such as Cleveland, Detroit, Buffalo, and Albany, place the control of athletics in the hands of the superintendent of schools and the director of the department. To be sure, there is an athletic association composed of principals, teachers, pupils, and coaches, who legislate, but the making of schedules, the engaging of teachers of physical education and coaches, the administration and number of games, the employment of officials, the purchasing of equipment, and the handling of finances are accomplished through a regularized department of the school system. Nine states besides Michigan, Ohio, and New York have state directors of health and physical education, who sit as members of the executive boards of the respective state high school athletic associations. Such procedure has the common characteristic of not only enlisting the full co-operation of those whom school sport most directly touches, but of making it a part of the process of secondary education.

In this country, we have long recognized the gap that intervenes between school and college. It can be diminished, and it is being successfully diminished, but not by patterning college instruction

upon methods that succeed in schools. On both sides of the chasm there must be full and sympathetic understanding, to the end that the processes of education, secondary as well as higher, may proceed without interruption. But to say that what happens in college should also happen in schools, or vice versa, reflects a failure to comprehend at least one of the problems that the individual youngster presents. He is the first to put away childish things, and athletics, an informal implement in the educational process, help him in this respect equally with the more formal and longer recognized academic subjects. It is therefore by no means certain that college athletics ought to be made a definitely recognized part of the higher curriculum. The very ease with which the formula promises to solve the problem calls for further scrutiny. We must remember both that at some colleges athletics have been taken into the curriculum with excellent results, and that at others equally excellent results have been obtained by keeping them quite outside of the curriculum. Nevertheless, in any case, final authority over athletics must be exercised by the legally constituted governing body of the institutions. The authority may be delegated to the president, or to the faculty, or to both jointly, but it must never be delivered over to an independent agency entirely separate from the academic administration of the institution.

At every university or college, the administrative authority must face and solve a series of questions concerning the details of athletics. In this process, the primary consideration must be the educational welfare of the individual student. Only by recognizing this fact and acting upon it can any accrediting agency, regional or national, fulfill its functions. These questions concerning athletic administration will be differently answered at different institutions in different parts of the country. Standardization of detail in any such matter is the least desirable of all the ends to be sought.

After all, the accrediting agency is a voluntary association. It must deal with

general principles, but in arriving at those general principles, it is in duty bound to study details, from which the principles can be with patience inferred. In the course of such a process three groups of principles will sooner or later emerge: some negative, others debatable, and still others immediately acceptable as obvious in educational procedure.

For example, few are so misinformed as to postulate that academic standards should be debased in order to provide aggregations of athletes who will win games and attract crowds to pay off the bonded indebtedness that encumbers almost every stadium. No one would seriously propose that good sportsmanship should be disregarded in college athletics, or that physical examinations, having no importance, should be as perfunctory as it is possible to make them. I have yet to find an open advocate of the notion, apparently so prevalent twenty-five years ago, that intercollegiate athletics should be fostered at the expense of intramural sport. None of these postulates would find favor today. And yet the literature of American college athletics of the past frequently echoed with such notions, not always openly expressed but justifiably inferable from both word and recorded act.

A second group of principles to take form from such a process of consideration may be called debatable; that is, concerning them or the details they represent, there will be differences in opinion respecting expediency and the emphasis that is to be placed upon them. The question whether colleges and universities should leave the oversight of their athletics only to directors of physical education and employ no part-time coaches is certain to come up for answer. There may be questions also as to just what the responsibilities of such directors should include. The pros and cons of scholarships or aids to athletes will probably fall into the debatable category, not from the question whether athletes should be paid outright for their services on teams and crews, but with reference to the permutations and combinations of influences and assistance that bear upon

the problem. To this matter certain questions of alumni support to undergraduates are closely allied. Should this support be allotted through scholarship committees of faculties, or should it be assigned outright by the alumni who furnish it? Should individual graduates who wish to support young men in college, whether athletes or non-athletes, be led or required to take faculty committees or college officers into their confidence? How much influence in decisions respecting the conduct of undergraduate sport have alumni the right to wield? In making schedules, what weight should be given to the desires of local alumni groups? And should such groups be permitted the pleasures of post-seasonal contests? Should athletic associations or departments employ paid publicity men, and, if so, should their success be measured by the amount rather than the quality of newspaper publicity for which they are directly responsible? Should undergraduates be allotted jobs or employment by officials of the athletic association or department, or only by the employment agencies duly constituted by the college to deal with all undergraduates without special consideration? Should correspondence with prospective students, athletes and non-athletes, be handled in a regular administration office of the university, such as that of the registrar, or by some other officer responsible to the governing bodies of the institution? Should gate receipts be reduced? What proportion should the athletic budget of the university bear to its total educational budget? What proportion should a fair valuation upon athletic plant and equipment bear to the total valuation of university buildings and grounds? From a broadening point of view will arise considerations of whether physical education and college athletics should be regarded as one and the same and whether they should be administered identically, separately, or co-ordinately. These are only a few of the questions that will fall into the middle and debatable group.

It is not difficult to phrase a third group of topics in such a way that all

men will accept them almost as athletic axioms. Certainly the last word in athletics, as in other aspects of undergraduate life, curricular and extra-curricular, rests with faculties as representatives of the corporate bodies. Sports ought to be economically conducted for undergraduates, partly for their physical wellbeing, partly for their happiness, immediate and deferred, and partly as a means of maturing youth under responsibility. In this group of axioms it is not too much to hope that a place will be accorded to the corollary that the measure of success of any athletic program or expedient is its effect, immediate or future, upon the individual undergraduate.

Perhaps even more difficult of solution is the problem of how far and how fast a voluntary association should proceed in such matters. Because what I shall venture to say in a few moments will bear upon this topic, I prefer to leave it for the present and to pass on to certain special problems of general administration and of coaching.

Speaking very generally and without too much regard to the details of separate situations, there are discernible three types of administrative organization for college athletics in the United States. For convenience, we may designate these types as the co-ordinated type of organization, the flexible type, and the health type. Let us glance rather summarily at each.

By and large, our first type is co-ordinated and controlled by a director of physical education and athletics, variously titled. In his department there are four divisions, each in the hands of a competent administrator; the intercollegiate division, the intramural division, the women's division, and the division of gymnastic and corrective exercise. The head of each of these divisions is responsible to the director. At one side stands the department of student health, in the hands of a competent medical personnel, who advise their chief, and through him the director and the heads of the divisions, concerning physical needs and conditions of candidates and members of teams and squads, the need on

the part of individual undergraduates for normal or corrective exercise, and measure and record the physical development and condition of all students in the university. The medical service discharges for the whole university duties corresponding to those of a department of health in a municipality. At the other side of the sketch we find an athletic association, composed principally of undergraduates, members of the faculty, sometimes alumni, perhaps even townsmen, a body possessing varying degrees of power and authority. The officers responsible for the four divisions of physical activity, for the health of the community, and for the administration of the whole plan should, of course, be full-time persons with honorable and permanent tenure and plenty to do. The director and the chiefs of the divisions, and usually also a committee of the athletic association, are members of the faculty of the institution. In such an organization the principal officer is the director of athletics.

In the second type of organization, many of the functions co-ordinated more strictly under the first plan of organization, are discharged by a single individual, who may be an alumnus, or a member of the faculty whose teaching load has been lightened to suit his athletic responsibilities. In this plan, the medical and health services operate informally,—indeed, the principal characteristic of the second scheme is informality. At first glance, it might be supposed that in larger institutions where the informal plan is operating, there might be confusion as to responsibilities resulting in a general ineffectualness. In some instances, this may be the case. It is by no means the rule. At colleges, generally with an undergraduate body of less than one thousand and often of half that size, the informal organization works well if it works at all. Where it does work well, it owes its effectualness to the integrity, administrative ability, and foresight of the man in charge, however he be designated.

The third type of organizations is, from one point of view, rather more

broadly conceived than either of the others. At its head stands a qualified physician, who administers a program devised from the point of view of student health and welfare. In certain phases, he takes the place of the director of physical education who was in charge of the organization first discussed. The medical man might almost be designated a director of student health and physical welfare, for in his hands are gathered all of the responsibilities and powers that bear upon and co-ordinate the physical activities of students. He is the chief of the health service, and he draws together the various divisional bodies and organizations that deal with intercollegiate and intramural athletics, formal and informal, for men and for women, selects his own assistants of every grade and function, and directs certain courses of instruction in individual and group hygiene. His work is intimately associated with the school of physical education, if one exists at the particular institution. In this type of organization the emphasis is placed primarily upon securing and maintaining the health, and especially the physical and mental health, of the undergraduates.

No one of these types of organization, as I have outlined them, is true to all conditions at any university or college I know. For purposes of classification, I have modified and standardized conditions at groups of institutions in order to bring out the essential features of their athletic administration. It is not by any means certain that any one of these rough, general kinds would fill completely the needs of any individual college or university of the North Central Association. At the same time throughout all three runs one essential consideration which is this: The only formula for the successful administration of any athletic program or department is a capable personnel, into whose hands are given full responsibility and the powers that go with it, and who are free to work out, over a period of time, their own salvation, and co-operatively, the salvation of the undergraduates.

We turn now to three special problems that are intimately related to those just discussed: Two of these special problems relate to personnel, while the third bears upon standards in intercollegiate relationships.

To judge from a recent study in the field of physical education, the training of directors for schools and colleges varies widely in quality over the United States. Certainly there are at present comparatively few men to whom could be entrusted the operation of a program of our third type. Some such observations are probably applicable also to numbers of medical men to whom the welfare of athletic squads is now entrusted. Just what personal qualifications a health director or team physician should have has been stated by more competent persons than I. Be all this as it may, no set of standards for college athletics can be regarded as complete which does not take into consideration the bearings of sport upon student health, and which does not include some reference to the physical supervision of undergraduates respecting the hygiene of daily life.

The second of these special problems bears upon coaches and coaching. The qualities that the American college or university athletic coach should possess are not difficult to state; high personal character, skill in teaching games, and appreciation of the limitations of his own medical knowledge, an alert comprehension of the ethical values that inhere in sports, and a conviction, which he translates into action, that sports are important to physical education, to the informal processes of higher education, and to the happiness of undergraduates. The coach should teach sportsmanship more by example than by precept. He may, of course, be paid fairly for his own services, but he should see to it that his men who participate in intercollegiate sport engage in it solely for "the pleasure and the physical, mental, or social benefits" they may derive, and that for them "sport is nothing more than an avocation." The number of coaches, with or without faculty status, full-time or

part-time, well paid or badly paid, formally educated in the details of physical education or developed from the ranks of players or alumni,—the number of men, I say, who at the present time possess many of these qualifications is one of the heartening aspects of present day American college sport. For my own part, I will not say that only a professional director of physical education should coach a college sport, or that it is a complete solution of the problem to appoint an expert, qualified coach to a faculty and thereafter to leave him insufficiently occupied during three-quarters of the academic year. Few other phases of our college athletics are so unsusceptible of solution by formula.

As respects the third of these special problems we are examining, the efficacy of the college athletic conference as a standardizing agency is open to scrutiny. In general, standards promulgated by such an association are the result of numerous compromises between special interests. They approach the minimal. The tendency is to reduce the scholastic eligibility, and amateur standards of member institutions to one dead level. Fortunately the university that has a just appreciation of its functions and responsibilities is not content to have its own individual standards thus reduced. An outstanding example is to be found in an athletic conference in the South, whose regulations permit the employment of athletes on varsity squads as gymnasium instructors. At least one university of the conference does not countenance this practice. An academic accrediting body can probably do more to raise athletic standards than an athletic conference, because the interests and predilections of athletic people are likely to be so powerful as to obscure the general relationships of sport to education.

Whatever action an accrediting agency like the North Central Association may take respecting the administrative guidance of athletics at institutions that have thus associated themselves together, such action should be patient and unhurried. Experiment is its breath of life. Wise

action implies, not the immediate overturning of existing procedure, but consideration sufficiently matured to bend old processes and expedients to new and better ends. Any program for improvement might well be conceived in the form of a graded series of steps, covering from six to ten years, laid off in stages,—a ladder, as it were, with rungs, up which the member-institutions engage to climb. The fact that some universities may start nearer the top will not necessarily decrease the difficulty of their last few steps. Those that start lower in the scale may soon distance the others. And it is even possible that those who appear to be climbing very fast indeed may be found to have skipped a rung or two.

No educational measure of progress in athletics can be recommended in all of its phases that does not vouchsafe to adhering institutions the right to maintain their own individuality and solve their own problems in a way acceptable both to others and to themselves. An attempt to standardize details of method and of practice may easily become an abomination, but uniform agreement upon principles is fundamental. Among such principles, two, I believe, are frequently neglected. First, the advantages that flow from mere bigness in college athletics are often overestimated. Here, as elsewhere in education, quality is not to be neglected, however large the numbers that may be enlisted. Secondly, college athletics at their best, whatever their status and their relation to the more formal aspects of education, are sport. Their best pursuit involves a multitude of values and relationships which we group together under the term sportsmanship. It is essential that the sport and the fun for those who participate in our college athletics be preserved. Only thus can sport contribute its share to American higher education.

A colleague of mine is fond of telling of a call he once paid upon the keeper of an old-fashioned country store in up-state New York. In the course of conversation, the storekeeper remarked, "Well, John, I can't see much difference

between you fellows in the big cities, like Albany and Chicago, and St. Louis, and Washington, and us fellows, as we sit round the stove in this country store in the evenings. But there is one big dif-

ference. You city fellows keep discussing and discussing things; up here we settle 'em." I here conceive it my duty today to discuss many things and to attempt to settle none.

Progress Report on the Development of Teaching Units in High School Physics*

By A. W. HURD

INSTITUTE OF SCHOOL EXPERIMENTATION, TEACHERS COLLEGE,
COLUMBIA UNIVERSITY

The sub-committee on physics has been at work on the development of teaching units for three years. In the beginning the ultimate and immediate objectives as outlined by the Committee on Standards for Use in the Reorganization of Secondary School Curricula were adopted. In spite of considerable expressed sentiment in different quarters that these objectives would not help in the reorganization of our curricula, the sub-committee is still imbued with the feeling that they will be of inestimable help if only subject matter specialists can get themselves to break away from tradition long enough to actually give these objectives half a chance. The trouble is that they have never yet been seriously accepted. The statement seems perfectly logical and reasonable, that unless materials being used in our secondary schools can be made to contribute to these objectives, they have no place in the curriculum. We must continually emphasize the conception that the school is for the development of the pupils and the attention of teachers should be concentrated always on the welfare of the individuals and groups of pupils. There is a vast difference between being interested in pupils and in subjects, and it does not at all follow that one who is enthusiastic about his chosen academic subject will either interest his pupils in it or guide them wisely into worthwhile activities. That he understands the pupils is fully as fundamental. This point of view is regarded as a vital one to the members of the sub-committee. It is the point of view which is going to mean success or failure in attempts to reorganize on the bases of the stated objectives.

Perhaps the sub-committee on physics

is inviting criticism in its apparent haste in getting out tentative unit outlines! It does so knowing that at once there are being presented opportunities for criticism. It should be recalled that in each unit are included first, a list of common activities for all pupils (minimal essentials); second, a list of suggested additional activities for capable pupils (to care for individual differences); and third, a list of suggested reference books. A unit try-out involves the administration of a preliminary test before, and a final test after, a period of instruction. Furthermore, the whole scheme presupposes these units to be tentative and that changes made are to be based primarily upon objective data obtained from the actual experimental use of the units.

The program in toto then, is planned to cover a long period of time and therefore, is in the nature of a progressive attack upon teaching problems confronting instruction in physics.

It is quite difficult to keep one's attention concentrated on figures which may serve as guides in this matter of curriculum construction. It is much easier to cast them aside, especially when they seem to get in the way, and follow a course not beset with so much laborious computation. However, as this premise was adopted by the Committee, it is right and proper at this time, to take stock of any facts disclosed by the data already collected and if possible formulate any principles of future action.

The last report of the sub-committee on physics was made at the annual meeting of the North Central Association at Chicago in March 1929. This was printed in the September number of the Quarterly. The following is a list of accomplishments during the school year 1928-9. This work was incomplete at the time of the March 1929 meeting.

1. Tentative drafts of the last 14 of

*A paper read before the Commission on Unit Courses and Curricula, in Chicago, March 19, 1930.—The Editor.

the total number of nineteen units were made, similar to those published in the March Quarterly for 1929. Unit outlines not heretofore published are now in the hands of the editor of the Quarterly for publication in an early number of the Quarterly. It may be well to say that the form of the latter outlines has been altered somewhat. In the outlines published in the March 1929 Quarterly, all activity items were grouped. The "knowledge" items were placed together, as were similarly the "technique" items, and the "appreciation" items. In later units, this grouping is not followed. The small letters k, ap, and t, standing, respectively, for knowledge, appreciations, and techniques are placed before each item to indicate the *primary* purpose of the item in the list of immediate objectives. The selected ultimate objectives are placed, as before, after the unit title or topic.

2. Twelve units were taught in one or more schools, these being units I, II, III, IV, V, VI, VII, VIII, IX, X, XI, and XVI. Previous data covered only Units I and II.

3. Preliminary and final tests were given for these units and the tests scored at a central office under the supervision of one person. Most of these tests were printed and distributed for pupil use from the central office at the Bureau of Educational Research, University of

Minnesota. Table I gives a list of the tests, classes, teachers, and pupils.

4. Units were used in many other classes but the test data are not available for them.

5. Eight different teachers furnished test data for "try-outs" of one or more units. Ten had direct contact with the drafting of one or more units. Thirteen have attended one or more meetings concerned with the units.

6. The following data were summarized:

a. Mean scores in the preliminary and final tests of all tests listed in Table I, for each school group and all groups combined. (92 distributions)

b. Mean gains for each school group and all groups combined.

c. Mean scores of seniors and juniors, respectively, in the preliminary and final tests. (116 distributions.)

d. Mean scores of (1) those having and (2) those not having general science. (180 distributions.)

7. Tabulated records were made showing the records of each pupil on each test.

8. Tabulations were made showing the number and percent of correct responses to each test item for each school group, for all preliminary and final tests so far taken.

9. Four reliability coefficients have been computed, the values being $.88 \pm .01$, $.90 \pm .01$, $.91 \pm .01$, and $.88 \pm .01$. The indices of reliability are, therefore, in the neighborhood of .95.

10. Seven hundred reprints of Units I to V inclusive, as printed in the March Quarterly were distributed among co-operating schools for use during the school year 1929-30.

11. Approximately 1500 copies of unit tests, were distributed among schools where teachers expressed a desire to use them.

12. Approximately 20 teachers were supplied with material for use in trying out units.

TABLE I

TESTS, CLASSES, TEACHERS, AND PUPILS INVOLVED IN UNITS IN HIGH SCHOOL PHYSICS

TEST	CLASSES	TEACHERS	PUPILS
Preliminary and Final			
I _____	11	5	255
II _____	9	5	197
III _____	4	2	96
IV _____	2	1	30
V _____	6	3	119
VI _____	2	1	31
VII _____	2	1	35
VIII _____	6	3	123
IX _____	4	2	92
X _____	4	2	79
XI _____	6	3	119
XVI _____	4	2	85

TABLE II

ACHIEVEMENT DATA ON UNIT TESTS IN HIGH SCHOOL PHYSICS 1928-1929

Groups	Pupils	Pre-test		Final Test		Gain* (Mean)	Per Cent** Gain	Variability Final vs. Prelim.
		Mean	S. D.	Mean	S. D.			
TEST I (Possible score 72)								
I	65	20.2	7.4	31.3	9.0	11.1	15	More
II	70	5.9	6.2	27.6	17.2	21.7	30	More
III	30	6.8	5.1	31.8	11.1	25.0	35	More
IV	15	10.5	7.2	32.5	7.5	22.0	30	More
V	31	13.4	5.4	32.0	7.2	18.6	26	More
VI	24	15.2	5.1	36.9	8.1	21.7	30	More
VII	30	14.3	5.8	44.5	10.0	30.2	42	More
TEST II (Possible score 58)								
I	60	15.9	7.9	31.9	8.4	16.0	27	More
II	66	9.4	5.4	27.0	6.1	17.6	30	More
III	17	5.2	3.4	28.7	6.9	23.5	40	More
IV	15	1.8	1.7	38.8	6.9	37.0	64	More
V	39	15.6	10.9	39.8	8.3	24.2	42	Less
TEST III (Possible score 103)								
I	61	23.2	8.7	44.0	12.3	20.8	20	More
II	35	15.0	8.0	53.2	13.8	38.2	37	More
TEST IV (Possible score 66)								
I	30	16.9	5.7	42.0	11.0	25.1	38	More
TEST V (Possible score 79)								
I	68	19.1	6.7	34.6	9.4	15.5	20	More
II	67	19.0	6.5	37.3	8.6	18.3	23	More
III	16	25.9	8.0	49.1	9.0	23.2	29	More
IV	36	29.0	9.0	57.9	5.2	28.9	36	Less
TEST VI (Possible score 42)								
I	31	15.6	5.6	28.6	5.7	13.0	31	More
TEST VII (Possible score 74)								
I	35	14.9	8.6	35.4	8.9	20.5	28	More
TEST VIII (Possible score 120)								
I	44	25.3	12.5	59.8	14.4	34.5	29	More
II	43	25.8	15.7	60.4	12.7	34.6	29	Less
III	36	25.1	12.6	77.5	13.5	52.4	44	More
TEST IX (Possible score 35)								
I	46	7.8	4.8	19.4	5.3	11.6	33	More
II	46	8.2	5.6	19.6	5.1	11.4	32	Less
TEST X (Possible score 97)								
I	44	24.0	10.0	50.2	10.0	26.2	27	Same
II	35	12.5	6.7	50.7	12.3	38.2	39	More
TEST XI (Possible score 28)								
I	37	8.1	4.3	17.1	4.3	9.0	32	Same
II	38	8.4	4.2	17.2	4.3	8.8	31	More
III	44	7.4	3.4	21.3	2.6	13.9	50	Less

*In score points.

**To the nearest whole number.

TABLE II—CONTINUED

ACHIEVEMENT DATA ON UNIT TESTS IN HIGH SCHOOL PHYSICS 1928-1929

ACHIEVEMENT DATA ON UNIT TESTS IN HIGH SCHOOL PHYSICS 1928-1929								Variability
Groups	Pupils	Pre-test		Final Test		Gain* (Mean)	Per Cent** Gain	Final vs Prelim.
		Mean	S. D.	Mean	S. D.			
TEST XVI (Possible score 77)								
I	31	9.0	5.0	35.0	9.8	26.0	34	More
II	30	10.2	4.7	40.0	8.5	29.8	39	More
III	34	13.3	6.8	40.2	12.2	26.9	35	More

*In score points.

**To the nearest whole number.

Table II shows summaries of the achievement data by school groups for preliminary tests, final tests, and gains. This includes variability data computed at the Institute of School Experimentation since October 1st. It is to be understood that the committee rests its case entirely upon factual data. The assumption is clear that the factual data already collected and now being collected are to constitute the primary criteria from which judgments are to be formed. The methods followed in tabulations and computations are approved methods now believed proper for work of this kind.

ANALYSIS

a. In every case there is a gain in mean ranging from 8.8 to 52.4 score points or 15 per cent to 64 per cent of the possible score.

b. Of the 34 groups of pupils represented, the mean gain is above 30 in 7; above 20 in 21; above 10 in 32.

c. Of the 34 groups of pupils represented, the per cent of gain in the mean is above 20 per cent in 31; above 30 per cent in 19; above 40 per cent in 5; and above 60 per cent in 1.

d. Of the 34 groups of pupils represented, the variability about the respective means is more after the final test in 27; is less, in 6; and the same, in 2.

e. The mean gain per group for the various tests is as follows:

Test I	30%	Test VII	28%
Test II	41%	Test VIII	34%
Test III	28%	Test IX	32%
Test IV	38%	Test X	33%
Test V	27%	Test XI	38%
Test VI	31%	Test XVI	36%

f. The mean gain per group per test is 33%.

g. The mean score in preliminary tests is less than 25% per test.

h. The mean score in final tests is less than 60% per test, usually about 50%.

The following conclusions are conservative statements of truths indicated by the data:

1. There is clear evidence of a gain on the part of every group in every unit. (Each group contains from 1 to 3 classes. Original tables show *gains* for every class and every pupil.) The mean *gain* per group ranges from 9.0 to 52.4 score points on tests whose *possible* scores range from 28 to 120; or a gain of from 15% to 64% of possible scores. The mean gain per test is 33%.

2. There is evidence that groups and pupils vary considerably in the gains shown, as well as in scores on the *preliminary* and final tests. There are many reasons for these variations. The data at hand are insufficient for drawing any conclusions on these reasons. Possible reasons are differences in individuals, differences in instructors, differences in previous instruction, and differences in methods. The only fact that stands out here is that all pupils do not achieve to the same degree.

3. There is evidence that achievement is not as great as might be desired. That is, if the objectives are reasonable, the activities well chosen, and the tests good measures, there still remains much opportunity for accomplishment planned. In other words, if it be premised that the plans were wisely made, the pupils have not achieved as well as the instructors had hoped. Either (a) the objectives and activities have not been wisely chosen;

(b) enough effort has not been put forth by the pupils; (c) the instruction has not been wisely directed; or (d) enough time has not been allowed for accomplishment.

4. There is evidence that the pupils tend to have greater ranges of ability after instruction than before. In other words, instruction as carried on has not made pupils more alike, but more unlike. While all have shown measurable gains in ability, the variabilities about the respective group levels are greater after, than before, instruction.

Two possible factors in achievement have received considerable study, viz., (1) achievements of seniors versus juniors; and (2) the effects of a previous course in general science. For example, if we knew that seniors achieved significantly higher than juniors, it would be of advantage to place the course in the senior year. Or, if on the other hand, students having general science were immeasurably superior, it would be wise to require general science as a prerequisite course in order to secure more satisfactory achievement.

The data available on achievements of seniors and juniors are inconclusive, but do not support the tentative conclusion stated in our previous report that seniors accomplish the measured objectives of the units better than juniors. A study of the '58 distributions for the preliminary test shows that the mean scores of seniors were higher 21 times and of the juniors, 8 times. Similarly for the final tests, the seniors were higher 15 times and the juniors, 14 times. For mean gains, the seniors were higher 14 times and the juniors, 15 times. This evidence favors neither seniors nor juniors conclusively. It is noticeable from the original tables that in schools where the classes are mainly composed of juniors, the juniors seem superior, and in schools where the classes are mainly seniors, the seniors seem superior; indicating that the pupil who is irregular, i. e., in a class to which he does not regularly belong, is, on the average, a poorer student.

To study the matter further, percentile graphs were constructed covering the first six unit tests *including (1) seniors*

and (2) juniors, in all classes. That for preliminary Test I showed seniors slightly ahead; for Test II, seniors considerably ahead; for Test III, juniors considerably ahead; and for Tests IV, V and VI very little difference. The graphs for the final tests showed the seniors clearly ahead in all cases. On the face of it, these results seem clearly to favor the seniors, but a further study showed that this seeming superiority was attributable to the consistently greater final scores from two classes in one school composed largely of seniors. Therefore, it is not possible to tell from the graphs whether the apparent superiority of the seniors is due to the fact that they are seniors, or to some other factor. It might be due, in this case, to superior instruction in the one school mentioned, or a high selection of ability in pupils in this school. It shows the dangers of including pupils from several schools and drawing conclusions too hastily.

Three causes might be advanced for the superiority of seniors (if they are superior); first, their maturity on account of age; second, their longer school life, including the benefits of certain courses, notably chemistry, pursued during their junior year; and third, the possibility that they represent a select group due to increasing withdrawals from school as the years advance.

If due to the first, comparisons of the mean achievement ratings of various age groups would tend to show an increase with age. In order to study this phase, mean ratings for Tests I, II, III, and VIII were found for the age groups 15, 16, 17, 18, and 19. For this classification any age between 14 years 7 months and 15 years 6 months was classified as 15, and so on for the other ages. Only the four tests named provided enough pupils to make a fair sized group for each age. Even some of these are too small for drawing reliable conclusions. Table III presents the figures.

What tendency is evident indicates an inverse proportionality between rating and age. The statistical device, the difference divided by the standard error of

the difference, shows only three actually significant differences. Those are for Test I between the 15 year group and the three other age groups, respectively, 16, 17, and 18. The 19 year groups were not included in these statistical comparisons because they were so small. The apparent superiority of the 15 year old group and inferiority of the 18 year

course in general science are the ratings of the two groups of students in the unit tests. The groups consist of students (1) who had, and (2) who had not, previously studied general science. Unless the subject of general science has a selective function of sorting out more intelligent students, or students more interested in science in general, either or

TABLE III

MEAN RATINGS OF VARIOUS AGE GROUPS ON UNIT TESTS IN PHYSICS

Age Groups	TEST I		TEST II		TEST III		TEST VIII	
	No. of Pupils	Mean	No. of Pupils	Mean	No. of Pupils	Mean	No. of Pupils	Mean
15 yrs.	38	37.85	18	33.35	13	47.70	14	65.70
16 yrs.	101	31.20	76	28.75	23	43.05	21	68.85
17 yrs.	84	31.30	68	30.22	41	43.90	31	60.10
18 yrs.	33	26.95	30	27.65	10	41.50	8	73.75
19 yrs.	7	26.40	7	29.00	8	38.10	3	63.35
Total	263		199		95		77	

old group are the most noticeable. Test VIII seems unlike the other three tests. This is a test on electric lighting.

There is no evidence available to show either that seniors receive benefits from certain junior courses helpful to them in senior physics; or that senior students represent a select group because of increasing eliminations as the school years advance.

The following summary may be made:

1. There is no conclusive evidence to show that either seniors or juniors as groups do any better work in the units studied.

2. There is some indication that the younger students in the groups studied tend, on the average, to do better work than the older students. This is not indisputably proven, however.

There is no evidence to show whether or not pupils are more able as they mature to gain increasing returns from a study of high school physics. Apparently the way to get the data on this question is to teach a unit to a younger and an older age group at their *normal levels* in school, and apply tests as used in this study.

The data available to determine the effects on achievement of a previous

both of which may influence ratings in physics, it can be assumed that those having had and not having had general science compose two equal groups. It seems fairly reasonable, in view of the place of general science in the curriculum, to believe that it has not yet come to have much of a selective influence. The chances are that whatever influence it may have is in selecting the poorer student.

The data were finally lumped for all students for each test so as to discount the effect of smallness of group, or localization of conditions. Table IV is self-explanatory.

While the figures in the table cannot be considered as conclusive proof, there are several conditions indicated.

1. Differences in mean scores on pre-tests show that in some respects those having general science are superior as groups. For example, Tests I to IV inclusive, VI, VII, IX, and XI show small differences. Tests VIII, X, and XVI show apparently greater differences, while Test V shows a considerable difference. Test V is a test bearing upon the topics of heating, ventilating, and humidifying, and probably receives considerable attention in general science.

Test VIII bears upon electric lighting; Test X upon electricity in communication, and Test XVI on musical instruments as applications of the laws of sound. It would not be peculiar to find that pupils in general science would have some understanding of electric lighting,

the field of physics. These data also show no selective function of general science to sort out students of superior ability. Any indications point merely to the seeming truth that if groups have studied certain topics, they evidence more knowledge of the field and are

TABLE IV

MEAN RATINGS OF STUDENTS IN UNIT TESTS IN HIGH SCHOOL PHYSICS TO COMPARE
THOSE HAVING HAD AND THOSE NOT HAVING HAD GENERAL SCIENCE
THOSE NOT HAVING
GENERAL SCIENCE
THOSE HAVING GENERAL
SCIENCE

Test	Possible Score	Groups, No. of	No. of Pupils	Pre-Test	Final	Gain	No. of Pupils	Pre-Test	Final	Gain
I	72	7	179	11.53	32.12	20.59	82	12.92	38.26	25.34
II	58	5	131	10.08	30.26	20.16	66	12.57	33.75	21.18
III	103	2	61	20.09	44.21	24.11	35	17.77	51.85	34.11
IV	66	1	6	14.66	43.33	26.66	24	17.04	41.41	24.37
V	79	2	76	18.67	36.06	17.38	26	29.15	61.69	32.84
VI	42	1	6	15.66	30.16	14.50	25	14.60	27.76	13.16
VII	74	1	7	15.29	36.85	21.56	28	14.56	34.35	19.78
VIII	120	2	44	23.07	62.02	38.95	35	27.06	75.00	47.94
IX	35	1	39	7.46	18.74	11.38	7	8.15	19.42	11.28
X	97	2	10	15.30	47.50	32.20	69	19.87	49.78	29.91
XI	28	2	34	7.44	16.52	9.08	47	7.70	20.70	13.00
XVI	77	3	47	8.87	33.44	24.57	38	12.08	38.11	26.02

telegraphs and telephones, and some of the principles of sound, beyond pupils who had never taken general science.

2. Differences between the groups seem somewhat accentuated in the final tests. This is especially marked in Tests V and VIII and somewhat less so in Tests III, I and XVI.

In order to analyze the results, let us call the group not having general science, group a; and those having general science, group b. In the preliminary tests a exceeds group b three times, and group b exceeds group a, nine times. In the final tests, group a exceeds group b three times, and group b exceeds group a nine times. In gains, group a exceeds group b five times, and group b exceeds group a seven times.

It seems on the whole, that it helps to have had general science in some fields, notably electric lighting and heating, ventilating, and humidifying. In more unrelated fields, there is apparently less indication. There seem to be no general abilities gained from a pursuance of general science which carry over into

able to maintain the supremacy through a subsequent course in the same field.

The data so far given cover that procured during the school year 1928-29, though the analyses of the data were carried on since October 1st, at the Institute of School Experimentation. In addition to that cited, many more data are being collected through the experimental "try-outs" during the current year 1929-30, through the Institute in collaboration with the Committee on Standards for Use in the Reorganization of Secondary School Curricula. Up to the present time (February 5th) 46 units are being or have been used in schools in North Central Association territory. Included in these experiments are several where smaller amounts of time than the original designation are being used. Each of the nineteen units is being used with one or more groups. These will give data on all units not used last year.

All units have now been rewritten in work-book form. Improvements have been made in each one. Tests IX and XI have been completely revised. In

4 schools, control experiments in method are under way. The work-book forms are being used in these experiments in order to discover their possible value in increasing measured achievement. An investigation of other possible methods is being made, through personal visits to observe the instruction of some of the better known teachers of physics. The ultimate purpose of these visits is a classification of existing methods, with

it is difficult at present to get teachers to give even as much as three weeks to any of the outlined units. The claim is made, and it seems just, that the conventional course can not be covered if so much time is given to each unit. For this year's trials, eight units have been tentatively assigned 750 minutes each of class time; ten have been tentatively assigned 500 minutes of each class time; and one has been tentatively assigned

TABLE V

NUMBER OF TEST ITEMS RECEIVING AT LEAST 50% MORE OF CORRECT RESPONSES IN THE FINAL TEST THAN IN THE PRELIMINARY TEST BY ANY STUDENT GROUP

	TESTS										
	I	III	IV	V	VI	VII	VIII	IX	X	XI	XVI
Number of Items.....	32	11	14	36	9	14	43	4	43	16	15
Total Items in Test.....	72	103	66	79	42	70	120	35	97	28	77

a possibility of formulating distinct procedures, the relative outcomes of which may be determined by further controlled experimentation.

In our reports, we may have stressed heretofore the lack of higher final ratings and gains in the tests used. Perhaps it may be wise and just as profitable to stress the achievements made. When we reflect for too long periods on the failure of instruction to produce hoped for results, we may become pessimistic, not always realizing that pupils have not spent as long times on the study of the course content as have instructors. In other words, we are prone to expect too much.

Table V gives the numbers of items in the tests specified, to which there were at least 50% more correct responses in the final test than in the preliminary test for any student group.

These records represent best records of any single student group. But they show results actually obtained, and possible, therefore, of being surpassed.

There seem to be but few alternatives in the matter of coming to some conclusions on quantitative selection for the present year's course in physics. Each is discussed briefly.

First: Delay decision until more unit trials have been made.

It may be said in this connection that

600 minutes of class time. This total would amount to 46 weeks, counting a school period equal to 50 minutes, with 5 such periods per week.

For some of the latter trials, the time limit has been removed completely. From data already received this year, the records made are, on the average, no higher—not even as high—as those for last year. There is one exception to this statement; one school where achievement has been excellent. This is in Unit XVI, Musical Instruments. The mean final score was in this case 78.2% of the possible total and the mean gain 63.0% of the possible total score. While the class was small, including but five pupils, the methods used are worthy of mention. It is interesting to know that the five pupils were not brilliant students, the highest I. Q. being 106. In the words of the instructor: "We used the preliminary test for the unit to launch our study of Sound, no discussion of this division of physics having preceded the test. Just before collecting the papers, I permitted each person to select and copy the two questions in which he was most interested, for study.

Only one reference on the suggested list was available, but the pupils used their texts and formulated for themselves a list of bibliography available,

using both books and periodicals. After study and discussion of the questions brought up by the pupils, they saw that before they could get a definite knowledge of the items within the unit, they must become acquainted with the principles of sound. By comparison with magnetism, which we have just completed, the class formulated the following outline: I. Sources of sound. II. Carriers of sound. III. Is sound governed by laws and principles? IV. Application of the laws of sound to music.

"I then asked for instances within their observation or experience, indicating that laws and principles governed some musical phenomenon. One pupil suggested that the pitch of a violin string is raised by tightening it, and out of that, with no study or reference books, the class developed for themselves three laws of vibrating strings. Then we went into the laboratory and verified each law.

"Pupils were early led to realize that the three objectives in the study of subject matter are information, appreciation, and techniques.

"Pupils kept lists of new terms encountered. They secured pictures of instruments and of noted musicians. Since the time limit prevented excursions which we would otherwise have made, we took imaginary trips to—a large pipe organ, our own auditorium (an example of poor acoustics), a new chapel in the hospital of our town (example of excellent acoustics), Hollywood Bowl, Singing Tower, Whispering Gallery in Statuary Hall in the Capitol at Washington, D. C., and the one in St. Paul's Cathedral.

"Pupils were allowed to follow their own plans, suggestions, and ideas. Outlines were not put into the hands of the pupils until the last few days, when they were used as a means of organizing *information*, which they had gained on their own initiative."

It doesn't seem wise to make more trials such as those already made, unless a campaign be planned and followed for finding methods of teaching which will give superior results. This has possibilities.

Second: Leave the units as they stand making only minor changes, but setting a minimum score for each test to be met by individual pupils. This may be the mean score per test already determined. Or the theory of the normal distribution may be followed, norms being established in sigma units with 50 as the mean. Those below a grade of 35 on such a scale might be failed.

Third: Allow instructors to choose any twelve of the nineteen units, setting norms for the tests above the levels mentioned in the second alternative.

Fourth: Establish a list of minimum essentials with a minimum grade for passing. These may be selected from all units in a manner similar to that given in Table IV. For example, include all items to which at least 50% more correct responses have been given in the final test than in the preliminary test. This implies a decrease in the number of activities listed in those common for all pupils.

Fifth: Increase the time to be given to physics to allow for all nineteen units. Establish minimum norms as in the second and third alternatives.

Sixth: Establish a science curriculum similar to that in English, or the Social Studies. Develop units of instruction for all years of the secondary school. This will allow of a sequential curriculum. All of these units in physical science, which are considered important, may be cared for in such a plan.

For any one of these plans, experimental studies to determine better methods of instruction are still in order. The lists of suggested supplementary activities are necessary in all, as are also the lists of suggested references. The indications so far, are that capable pupils are being given opportunity to engage in *some of the supplementary activities*, and that a *few* are using *some of the reference books*.

The course is still too technical and the achievement too low to expect much student participation in the enriched added portions. Besides, there are too many requirements in other subjects of

the curriculum. Investigations¹ have shown that a high school course in physics does not contribute greatly to success in college physics, because the course in college physics is so mathematical and theoretical. Further investigation has shown, however, that students entering college physics have, on the average, ability to make scores on tests covering the present high school content in physics twice as high, if they have taken the high school course.²

This precipitates the question of preparation for college physics. The high school course cannot be a good preparation under existing circumstances. Either the college course is not well adapted to students coming from the high schools, or additional specialized courses with particular emphasis on the mathematical development of physical principles are necessary. It seems fairly well recognized now, however, that preparation for present college courses is not the primary function of the secondary school.

With activities selected to accomplish the ultimate and immediate objectives fairly well cared for, all the alternatives given may be seen to be dependent on two, viz., (1) increase the time possible for the student to spend on the units, or (2) decrease the requirements. These are supplemented by the ever present possibility of finding increased efficiency in methods of instruction. Data from nearly 70 experimental trials now being conducted may serve to enlighten us further, however. It is hoped the work-book sheets will prove valuable.

¹Unpublished data secured by the writer.

²Ibid.

The sub-committee makes the following recommendations:

1. That it be made possible for all schools to get the unit outlines for experimental use.

2. That experiments be continued with specific emphasis on method.

3. That the Association come to some decision on the alternatives mentioned with special reference to the problem of more time to science versus a limitation on requirements in science. This precipitates further considerations of the part of language, mathematics, history, and the natural sciences in the program of instruction. In other words, the problems facing the instruction in science are only parts of the larger problems of the total curriculum. The only way to settle these amicably is to concentrate on a study of the pupil and his needs, and forget that we are protagonists for any particular subject of study.

In conclusion the sub-committee wishes to re-emphasize respectfully that progressive and continuous reorganization is its objective. The implications are that the research point of view be communicated to teachers and administrators in the field. In order to make the kinds of studies now under way more fruitful, more preliminary work is essential. Local first week class surveys are recommended, so that instructors and supervisors may become better acquainted with their student groups and at the same time secure data which may be used in securing better conditions for experimentation, from which more valid conclusions may be drawn.

Teaching Units in High School Physics

(A Committee Report)

Units I to V, inclusive, were published in the March (1929) number of the Quarterly. Units VI to XIX are given below.

The ultimate objectives which each unit is best adapted to accomplish, are placed after the unit title. The immediate objectives are placed as sub-headings

for some of the units. In the units which were developed later, however, the small letters k, ap, t, h, and i, are placed immediately after the number of the item. These small letters refer, respectively, to knowledge, appreciations, techniques, habits, and interests.

It is to be understood that these ul-

timate and immediate objectives originally adopted by the Committee on Standards for Use in the Reorganization of Secondary School Curricula form the bases for all of the units in physics. If instructors notice carefully the immediate objective for each item listed, and emphasize this particular objective, it is hoped that the outcome will be much more definite. Furthermore, the methods to be used and the procedures to be followed will be more evident.

An illustration may make this view point more clear. A pupil, for example, may engage in an attempt to explain the construction of the telephone receiver in order to become acquainted with how it is made, how it works, who discovered it, the part that it plays in modern life, and the people engaged in useful occupations in which it is involved, for the ultimate purpose of discovering whether or not there is little or much likelihood of his being successful and happy by engaging in some phase of the telephone industry. Or a pupil may learn the laws of liquid pressure in order to understand the complexities involved in the construction of great water supply systems, so that he will appreciate the advances of civilization, and the duties and the responsibilities of each individual in conserving such effort as is neces-

sary in maintaining such a highly organized social state. The first uses activities in knowledge and appreciation to further the vocational aim. The second uses activities in knowledge and appreciation to further the social aim.

Immediate objectives may thus be accomplished by activities, these objectives, in turn, being designed to further the accomplishment of the larger ultimate aims. This is in accordance with the simple premise, that aims will be more surely accomplished if they are kept clearly in mind, and plans made definitely to accomplish them.

Committee Members:

Mr. A. W. Hurd, Institute of School Experimentation, New York City, Chairman.

Mr. H. J. Rohde, Central High School, Minneapolis, Minnesota.

Mr. H. A. Wolcott, Mechanic Arts High School, St. Paul, Minnesota.

Mr. J. H. Santee, North High School, Minneapolis, Minnesota.

Mr. E. J. Harrell, Johnson High School, St. Paul, Minnesota.

Miss Amber P. Klug, Central High School, Red Wing, Minnesota.

Mr. J. Skibness, Washburn High School, Minneapolis, Minnesota.

UNIT VI REFRIGERATION AND OTHER APPLICATIONS OF HEAT ENERGY

(Ultimate aims—health, vocational, social-civic)

COMMON ACTIVITIES FOR ALL PUPILS

FOR THE KNOWLEDGE OBJECTIVE PRIMARILY

1. Review carefully the units used in measuring heat.
2. Explain what is meant by the term "specific heat."
3. Explain what the term "latent heat of fusion" means.
4. Explain (a) evaporation (b) boiling. Show how pressure affects each.
5. Discuss six factors that affect the rate of evaporation of a liquid.
6. Explain Heat of Vaporization.

7. (a) Explain the vacuum pan.
- (b) List various places where this device is used.
8. Explain a pressure cooker.
9. Explain the term "thermal capacity" or "water equivalent."
10. Describe an experiment for determining the specific heat of a metal noting all the details involved.
11. (a) Explain how distillation is carried on. (b) List several industries where distillation (fractional and otherwise) is used.
12. (a) Will steam at 100°C cause

more or less serious burns than water at 100°C ? (b) Make a similar comparison for steam at 120°C and steam at 100°C . (c) Qualify both answers with scientific reasons to bear out the truth of your conclusions.

13. Make a report on various freezing mixtures. Which one is commonly used and which one will give the lowest temperature?

14. Explain the relation of refrigeration to health.

15. Report on modern refrigeration machines as used commercially and in the homes, giving a detailed explanation of their construction and theory of operation.

FOR THE TECHNIQUE OBJECTIVE PRIMARILY

16. Perform an experiment to show how increase and decrease of pressure affects the temperature at the boiling point of water.

17. Calculate the boiling point of water at an elevation of 5280 ft.

18. Find the number of calories it will take to change 1 gram of ice at -10°C . into steam at 110°C ?

19. Find the number of B. T. U. necessary to convert 1 lb. of ice at 0°F to steam at 212°F .

20. Perform a laboratory experiment for determining the latent heat of fusion paying special attention to the tabulation of your data both for observations and calculations.

21. Perform a like experiment for the determination of the heat of vaporization.

22. A mass of platinum weighing 12 gm. is taken from a hot furnace and plunged into 50 gm. of water at 10°C . The resulting temperature is found to be 21°C . Find the temperature of the furnace.

23. A piece of ice weighing 120 gm. is placed in a copper dish weighing 80 gm. Warm water at a temperature of 80°C is then added and the temperature of the mixture becomes 20°C . How much warm water was added?

24. Show how the mechanical equivalent of heat is important in the opera-

tion of a gas engine and a steam engine.

25. Explain the operation of the steam engine.

26. Explain the operation of the modern four stroke cycle gas engine.

FOR THE APPRECIATION OBJECTIVE PRIMARILY

27. Make a report on the advantages and disadvantages of the gas and steam engines.

28. Prepare to discuss the progress that has been made lately in our artificial refrigeration systems.

29. Discuss the increased use of refrigeration in regard to its effects on the general health of the nation.

30. Prepare a report on the evolution of the steam engine, showing how improvements have kept pace with the increased demands upon it.

31. Show how the steam engine (especially the locomotive) has played such an important role in our national expansion and prosperity.

32. Report on the vocational opportunities offered in the fields of refrigeration, steam or gas engineering.

33. Prepare to give reasons why the electric and steam auto have given way to gasoline propelled machines.

SUGGESTED ADDITIONAL ACTIVITIES FOR CAPABLE PUPILS

1. Report on various anti-freeze mixtures used in auto cooling systems.

2. Report on kinds of lubricants for automobiles considering the effects of heat and cold.

3. Debate: Resolved that air cooled engines are preferable to water cooled engines.

4. Report on the Diesel Engine—its theory, construction, and where used.

5. Report on the two cycle gas engine.

6. Report on the various methods used to measure high temperatures.

7. Make a similar report on measurement of very low temperatures.

8. Describe the phenomena of boiling water from the time it is heated until it is converted into steam.

9. Discuss "Heat a form of Motion."

10. Report on liquid air and low temperatures.

11. Explain the terms critical temperature and critical pressure of a gas.

12. Perform an experiment to show how increase and decrease of pressure affects the temperature at the boiling point of water.

13. Perform a like experiment for the determination of the heat of vaporization.

14. Show how the efficiency of steam and gas engines is determined.

15. Report on steam turbines.

REFERENCES

Glycerine Producers Association. 45 E. 17th St., New York City.

Everready Prestone. Chicago: National Carbon Company.

Pamphlets. Dayton, Ohio: Frigidaire Corporation.

Pamphlet. 30 E. 42nd St., New York City: Industrial Alcohol Institute.

Electrolux Gas Refrigerator. Evansville, Indiana: Servel Sales Company.

Steam, Its Generation and Use. 85 Liberty St., New York City: Babcock and Wilcox Company.

Voorhees, G. T. Refrigeration Machines. London: Ice and Cold Storage Publishing Company, 1908.

Anderson, J. W. Refrigeration Machines. New York: Longmans Green.

Book of Popular Science. Volume 12, p. 3953, 1924.

Madison, Cooper. Practical Cold Storage.

Ewing, J. A. Mechanical Production of Cold. 1921.

Hull, H. B. Household Refrigeration. Chicago: Nickerson Collins Company.

Ledoux, C. E. D. Ice Making Machines. New York: Van Nostrand Company.

Motz, W. H. Principles of Refrigeration. Chicago: Nickerson Collins Company.

Redwood, I. L. Practical and Theoretical Ammonia Refrigeration.

Schmidt, L. M. Principles and Practice of Artificial Ice Making and Refrigeration. Philadelphia: Philadelphia Book Company.

Tyndall. Heat a Mode of Motion. New York: D. Appleton and Company.

U. S. Department of Agriculture. Farmers Bulletin 1013. Practical Hints on Running a Gas Engine. Washington, D. C.: Government Printing Office.

Lynde, C. J. Physics of the Household. New York: MacMillan, 1914.

UNIT VII

ATMOSPHERIC ELECTRICITY AND SOME OF ITS MANIFESTATIONS

(Ultimate aims—leisure time, vocational, social)

COMMON ACTIVITIES FOR ALL PUPILS

FOR THE KNOWLEDGE OBJECTIVE PRIMARILY

1. Show by experiment, how the two kinds of electrification may be produced. In what simple law may the relationship between like or unlike charges be expressed?

2. Explain the use of the chain dragging from automobile trucks carrying large tanks of gasoline.

3. Find out what precautions regarding static electricity are taken in gas-filling stations, print-shops, woolen mills, and other manufacturing operations.

4. Explain why leather belts on running machinery sometimes become elec-

trically charged while the pulleys over which these belts run show no signs of electrification.

5. Give a statement concerning the relative importance of conductors and insulators in their commercial application.

6. Show in what respects magnetization and electrification are (1) similar; (2) dissimilar.

7. Explain the behavior of the pith ball electroscope in the case of (1) un-electrified bodies; (2) electrified bodies.

8. Show how the aluminum or gold leaf electroscope may be charged (1) by contact; (2) by induction.

9. Explain the use of the aluminum or gold leaf electroscope in detecting charges.

10. (a) Name the essential parts of a condenser. (b) show how it is charged and discharged. (c) Account for its ability to hold a large charge.

11. Find out how the condensers in a radio or a telephone differ from those in automobile spark coils.

12. (a) Explain the action of the electrophorus. (b) List some machines which apply the principle here utilized.

13. (a) Describe Franklin's kite experiment. (b) State the basis for Franklin's belief that the charge from the pointed wire on his kite would not harm him.

14. Show why a tall tree near a building is a good protection against lightning.

15. Give reasons in support of one of the following statements that the primary purpose of the lightning rod is (1) to take care of lightning when it strikes; or (2) to prevent its striking.

16. Represent by a drawing the electrical condition of a house just before and after it is struck by lightning, assuming the cloud at this time to be powerfully charged with positive electricity.

17. Statistics compiled by fire insurance companies show that lightning rods which are properly installed are a real protection, but that improperly installed rods are a menace. Explain the protective features of lightning rods, important precautions necessary in their installation and possible sources of danger.

18. Suggest precautions to be observed when out in a thunderstorm. Assume various conditions and suggest the proper action to be taken.

19. Why does a brick chimney need a lightning rod more than a steel smoke-stack of the same height?

20. Explain in a general way the origin of sound as illustrated by the following experiments: (1) a pithball held by a thread to the prong of a sounding tuning fork is violently forced away; (2) the surface of water touched by the end of a sounding prong is thrown into a fine spray; (3) the wire attached to

one prong of the sounding tuning fork and resting lightly on a smoked glass drawn under it produces a wavy line on the smoked surface; (4) if the above experiments are repeated when the fork is quiet no such results occur.

21. State any general facts concerning the origin and transmission of sound observed in the following: (1) Sailors imprisoned in a sunken submarine send signals to friends at the ocean's surface by tapping on the walls of the vessel; (2) The approach of a distant train can be heard by an ear pressed to the ground; (3) A famous inventor, though hard of hearing, is said to hear phonograph records perfectly by resting his head against the cabinet of the instrument; (4) A streetcar can be heard at a considerable distance when one is standing near a trolley pole.

22. (a) Explain the conditions under which thunder is produced. (b) Account for the rolling of thunder.

23. Explain how a siren may be used to determine the pitch of a sounding body.

24. Explain the reason for the usefulness of the speaking tube and the megaphone.

25. Explain why it is difficult to hear a speaker distinctly in a hall 55 ft. long but not in a smaller room.

FOR THE TECHNIQUE OBJECTIVE PRIMARILY

26. Demonstrate experimentally how an uncharged electroscope may be given either a positive or a negative charge from a negatively charged rod.

27. A flash of lightning is seen and four seconds later the thunder is heard. Find the distance of the lightning discharge, the temperature being 20 degrees C.

28. By means of a toy cannon or pistol, a stop-watch, a large scale map, and a thermometer, explain how you would proceed to measure the velocity of sound.

29. A fork making 512 vibrations per second produces resonance with a closed tube 16 cm. long. Find the velocity of sound and the approximate temperature.

30. A current of air is blown against a siren disc having a row of 48 holes while the disc is making 500 revolutions per minute. What is the pitch of the resulting tone? If the speed of the siren is doubled, how will the pitch be affected?

31. The captain of a steamer on the Mississippi River hears the echo of his whistle blast three seconds after he has sounded the whistle. Find the distance of the steamer from shore, if the temperature is 20 degrees C.

FOR THE APPRECIATION OBJECTIVE PRIMARILY

32. State in what important respect the knowledge of electricity among the Greeks at the time of Thales, 600 B. C., differed from that gained since the time of Gilbert, 1600 A. D. Point out the fundamental reason for the lack of progress during the 2200 years preceding Gilbert and for the marvelous advance during the 300 years following.

33. Point out the contributions to the subject of electricity made by the following: Thales, Gilbert, Gray, Boyle, Von Guericke, Newton, Hawksbee, DuFay, Henley, Canton, Cavendish, Coulomb, Watson, Bevis, Cunaeus, Muschenbroeck, Von Kleist, Faraday, Franklin, Holtz, Wimhurst, Henry, Maxwell, Hertz.

34. Prepare a report on the development of the lightning rod through reference to the work of Faraday, Maxwell, and Franklin.

35. Point out the contributions to the subject of sound made by the following: Pythagoras, Galileo, Arago, Gay-Lussac, Savart, Latour, Colladon and Sturm, Helmholtz, Lissajous, Tyndall.

SUGGESTED ADDITIONAL ACTIVITIES FOR CAPABLE PUPILS

36. Prepare a report on the possible uses of the electroscope in the location of radium, the investigation of cosmic rays by Millikan, etc.

37. Make a report on "Modern Methods of Lightning Prevention" using as a basis government bulletins and recent magazine articles.

38. The law requires the use of lightning arresters in connection with the installation of radio aerials, telephone and power supply devices. Consult the regulations of Fire Underwriters and indicate by diagram the function of a lightning arrester in one or more of the devices.

39. Give a brief explanation of the present theory concerning the origin of atmospheric electrification which precedes a lightning discharge. (Consult texts on meteorology).

40. Lightning strikes a barn. A man standing a little distance away suffers a distinct shock. Explain.

41. Make a report on the results of scientific observations of MacMillan and other explorers concerning the Aurora Borealis and related atmospheric electrical phenomena.

42. Make a report on the various types of condensers and their uses in such devices as the automobile, the radio, and the telephone.

43. If several condensers are available, demonstrate their arrangement in series and in parallel and give formulas for capacity for each arrangement.

44. Discuss the nature of the discharge of a condenser and its relationship to wireless waves.

45. On the basis of the electron theory explain (1) charging by contact and by induction; (2) the behavior of conductors and insulators; (3) the nature of the lightning discharge.

46. Prepare and give a report on the electrometer indicating its construction, method of connection to a circuit, voltage range, and possible uses.

47. Report on the experiments of Steinmetz and others in the production of artificial lightning discharges.

48. Discuss the principles underlying the use of the "Teletactor," the new device which enables the deaf to hear through their fingertips.

49. Explain the construction, operation, and uses of the stethoscope.

50. Give a brief report on the subject, "Architectural Acoustics." Make illustrative application of the principles discussed to specific cases, such as audi-

toriums, radio broadcasting, and vitaphone studios.

51. Investigate the principles and possible uses of Emile Berliner's new "acoustic cement cell." Prepare a class report giving the results of your study.

52. Discuss the acoustic phenomena observed in the following buildings: the Baptistry in the Cathedral of Pisa; St. Paul's Cathedral in London; The Mormon Temple, Salt Lake City, Utah; the Hall of the Statuary in the Capitol Building at Washington; the Minnesota State Capitol.

53. Explain the principles in one or more of the following: (1) Marimeter or Sonic Depth Finder; (2) Multiple Unit Hydrophone or Submarine Detector; (3) Sound Ranging; (4) Audio-phone.

REFERENCES

Bragg, Sir Wm. *The World of Sound*. New York: E. P. Dutton Company.

Clayton. *World Weather*. New York: MacMillan Company.

Humphreys. *Physics of the Air*. New York: MacMillan.

Redway. *Handbook of Meteorology*. New York: Wiley and Sons.

National Research Council Committee. *Introductory Meteorology*. New Haven, Connecticut: Yale University Press.

Gibson. *The Autobiography of an Electron*. Philadelphia: Lippincott.

Blazebrook, R. G. *Dictionary of Applied*

Physics. New York: MacMillan Company.
Moore, W. L. *The New Air World*. New York: Little Brown.

Watson. *Acoustics of Buildings*. New York: Wiley and Sons.

Pupin M. *From Immigrant to Inventor*. New York: Scribners.

Houston. *Wonder Book of the Atmosphere*. New York: F. A. Stokes Company.

Wade, H. T. *Everyday Electricity*. New York: Little Brown.

Darrow, F. L. *Masters of Science and Invention*. New York: Harcourt Brace.

Mayer, A. M. *Sound*. New York: D. Appleton Company.

Tyndall. *On Sound*. New York: D. Appleton Company.

Tyndall. *Elementary Lessons in Electricity*. New York: D. Appleton Company.

Benjamin. *The Age of Electricity*. New York: Longmans Green.

Benjamin. *The Intellectual Rise of Electricity*. New York: Longmans Green.

Cajori. *History of Physics*. New York: MacMillan Company.

Compton. *Pictured Encyclopedia*, V, 3, 5, 6, 8. Chicago: F. E. Compton Company.

Monograph B-5. Newark, New Jersey; Weston Electric Instrument Company.

Department of Agriculture. *Farmers' Bulletin 842. Modern Methods of Protection Against Lightning*. Washington, D. C.: Government Printing Office, 1917.

U. S. Bureau of Standards. *Technical Paper 56*. Washington, D. C.: Government Printing Office.

UNIT VIII

ELECTRIC LIGHTING SYSTEMS

(Ultimate aims—exploratory-vocational, leisure time, social, and health)

COMMON ACTIVITIES FOR ALL PUPILS

FOR THE KNOWLEDGE OBJECTIVE PRIMARILY

1. Explain how we get our electric energy for lights in our homes, streets and public buildings.

2. Sketch the general plan for a large electric power supply system. Use some particular system for illustration, if you wish.

3. Find out the cost of electric power

in your city, and show how your light bill is computed.

4. Describe briefly the development of the electric cell beginning with the simple voltaic cell.

5. Explain different methods of connecting two or more cells to form a battery.

6. Explain the general conception of an electric generator.

7. Explain the difference between a primary and a secondary battery giving some concrete examples of the use of each.

8. Make lists of primary cells, and secondary cells which are now used or have been used in the past.

9. What is a thermo-couple and illustrate its use by one concrete example.

10. Distinguish among the terms, electric current, electromotive force, and resistance.

11. Name and define the units now used in measuring electric current, electromotive force, and resistance, respectively.

12. List all the factors determining the resistance of an electric conductor.

13. Show what factors determine the electric current in a circuit.

14. List the factors determining the electromotive force of (1) a primary battery, (2) a storage battery.

15. Explain the meaning of the law called Ohm's law.

16. Explain how a simple arc lamp works.

17. Explain how an incandescent lamp works.

18. List the kinds of (1) arc lamps, (2) incandescent lamps, illustrating one use of each.

19. Explain one method of finding the resistance of a coil of wire.

20. Explain in detail how an electric current is commonly measured.

21. Explain in detail how E. M. F. is commonly measured.

22. Explain how incandescent lamps are commonly connected in a circuit, and show the advantages of this method.

23. Illustrate the meaning of (1) a series circuit, (2) a parallel circuit.

24. Show how the total current in a series circuit is computed, when the total E. M. F. and the resistance of each of the parts of the circuit are known.

25. Show how 5 incandescent lamps may be connected in parallel with a source of current and how the current in each lamp, and all lamps is computed.

26. Explain how the electric power for arc and incandescent lamps may be

found, and in what units power is measured.

27. Explain how heat may be produced by an electric current.

28. List electric devices utilizing the heat produced by an electric current.

29. List all the vocations which you can find related in any way to the work of this unit.

30. Explain the purpose of fuses, and how they are used in your own house.

FOR THE TECHNIQUE OBJECTIVE PRIMARILY

31. Draw a diagram showing 6 25-watt incandescent lamps connected in parallel, with a source of current furnishing 114 volts. Find the current in each lamp, and in all lamps.

32. If coils of 4, 6, 8 and 12 ohms resistance are connected in series with a source of current furnishing 80 volts, find the current in each coil and in all coils.

33. If an arc lamp and a rheostat are connected in series with a source of current furnishing 112 volts, and the resistance of the rheostat is 4 ohms, find the resistance of the lamp if it carries 10 amperes of current.

34. Experimentally determine (1) the resistance of a lighted incandescent lamp, and (2) 6 incandescent lamps in parallel.

35. Experimentally determine the power consumption of one incandescent lamp, 6 incandescent lamps in parallel, and an arc lamp circuit containing a rheostat.

36. Experimentally determine the cost per hour of one or more incandescent lamps, a flat iron, percolator, vacuum cleaner or other electric device.

37. Find the resistance of a coil of 18 ft. of copper wire .03 inches in diameter. Find the resistance of the same amount of iron wire.

38. Find the current furnished by three storage cells of 2 volts each E. M. F., through a resistance of 5 ohms, assuming the internal resistance of each cell to be 0, and connected in series.

39. Find the current furnished by the same cells in parallel.

40. Find the answer to the question, "Under what conditions should cells be connected in series and in parallel respectively?"

41. Given 4 coils of 3, 5, 8, and 12 ohms, respectively.

a. Find the total current furnished by a storage battery of 3 cells like those in (38) when these coils are connected in parallel.

b. Find the current through each coil when in parallel.

c. Find the total current through all coils in series.

d. Find the current through each coil when they are in series.

e. Draw a diagram of the circuit for (2) showing how an ammeter would be used to measure the total current and how a voltmeter would be used to measure the total voltage.

f. Draw a diagram of the circuit for (a) showing how the ammeter would be used to measure the current in any single coil, and how the voltmeter would be used to find the voltage for each coil.

g. Draw a diagram for circuit (b) showing how an ammeter and a voltmeter, respectively, would be used to measure total current and voltage.

h. Draw a diagram for circuit (b) showing how an ammeter and voltmeter, respectively, would be used to find the current and voltage for each coil.

42. What size fuses must be used to protect the circuit for an electric range having three 1000 watt burners, and two 1500 watt burners, on a 115 volt circuit?

43. Show how and why small Christmas tree lights are arranged in circuit.

44. Diagram your home lighting system, showing how the wires enter the house, and how the lights are connected in circuit.

FOR THE APPRECIATION OBJECTIVE PRIMARILY

45. Write a theme discussing the electric power company as a social institution.

46. Prepare an outline showing the different types of lighting used, ranking them in relation to (1) economy, (2) health. Show what type you would plan for your home with reasons.

47. Discuss proper uses of arc and incandescent lamps.

48. Show what changes have taken place in incandescent lighting in the last twenty-five years.

49. Explain the part that scientific research has played in improving electric lighting.

50. Prepare a short theme on any one of the following: Ohm, Volta, Faraday, Edison, Steinmetz.

51. Show why electric sockets in bathrooms and basements are porcelain.

52. Make a list of proper rules to follow in using electric lights for reading.

REFERENCES OTHER THAN TEXT-BOOKS

Fiske, B. A. *Invention*. New York: Dutton, 1921.

Gibson, C. H. *Great Inventions*. London: Seeley Service, 1924.

Bridges, T. C. *The Book of Invention*. London: Harraf, 1925.

Corbin, T. W. *Marvels of Scientific Invention*. Philadelphia: Lippincott, 1917.

Dickinson, L. P. *Easy Electrical Experiments*. Chicago: Drake, 1918.

Gibson, C. H. *Electrical Amusements and Experiments*. Philadelphia: Lippincott, 1925.

Croft, T. *Practical Electricity*. New York: McGraw Hill, 1920.

Willoughby, G. A. *Essentials of Electrical Work*. Peoria: Manual Arts Press, 1927.

Timbie, W. H. *Elements of Electricity*. New York: Wiley, 1925.

Wade, H. T. *Everyday Electricity*. Boston: Little, Brown, 1924.

Engineering Department, Nela Lamp Works, Cleveland. *Booklets and Bulletins on Lighting*.

U. S. Signal Corps. *Primary Batteries*. Washington, D. C. Training Pamphlet No. 7. 1923.

Meister, M. *Magnetism and Electricity*. New York: Scribners, 1929.

UNIT IX

ELECTRICAL GENERATION AND TRANSMISSION

(Ultimate aims—leisure time, vocational, social)

COMMON ACTIVITIES FOR ALL PUPILS

FOR THE KNOWLEDGE OBJECTIVE
PRIMARILY

1. Prepare a list of all devices familiar to you which make use of permanent magnets.

2. Explain how you would test a steel bar to discover whether or not it is a permanent magnet.

3. Give an explanation for the fact that vertical iron posts, steam radiators, etc. are often found to be magnetized.

4. Give some cautions to be observed in the use of the magnetic compass for determining direction.

5. Explain how an explorer would use a magnetic compass in unsurveyed territory. If he approached a magnetic pole of the earth, would the compass be useless?

6. Prepare a list of devices in which electromagnets are used.

7. Investigate one of the devices listed in No. 6 and give a report on the function of the electromagnets. Note the methods of winding, direction of current and polarity.

8. Explain, with diagrams, how the principles of electromagnetism are used in such electrical measuring instruments as the galvanometer, ammeter, and voltmeter.

9. In the production of electricity on a commercial scale, why are generators superior to other methods of producing current?

10. Give an explanation of the generator as an application of the principles of current induction.

11. Prepare an outline of the various types of D. C. generators as to field winding, pointing out the particular advantages and disadvantages of each, and its special applications.

12. Explain in a general way how the D. C. and A. C. generators differ in construction.

13. Give an explanation of the simple

motor as the converse of the generator in construction, operation, principle and use.

14. Give a discussion of the induction coil, its construction, operation, and principle, and most common applications.

15. Explain how a condenser is used in connection with an induction coil and in what two ways the condenser aids the action of the coil.

16. Prepare and give a demonstration of the various methods of current induction, and point out the general principle involved.

17. Give an explanation of different ways of producing direct current from alternating current and indicate the general principle in all.

18. Prepare an explanation of the transformer as an application of the principle of induction.

FOR THE TECHNIQUE OBJECTIVE
PRIMARILY

19. Experimentally demonstrate the condition of the magnetic field about various arrangements of permanent magnets.

20. Demonstrate experimentally the facts indicating the possible molecular nature of magnetism.

21. A radio amateur wishes to charge his storage A battery from a homemade rectifier device but does not know the positive terminal of the rectifier. With the aid of a magnetic compass, how could he be sure of the proper direction of the current through the battery charging circuit?

22. Diagram the parts of an ordinary vibrating bell and its circuit.

23. Make a diagram and explain the operation of the front and rear doorbell system of your home.

24. Set up apparatus and demonstrate how you might operate (1) one bell with two push-buttons, (2) two bells with one push-button.

25. While you are turning rapidly a small generator, have someone connect one, two, three, and more lamps of proper voltage across the terminals of the generator; finally, short the generator terminals. (The lamps should be in multiple arrangement). Explain the results.

26. Show how a laboratory model generator may be run as a generator or as a motor.

27. A one-eighth H. P. motor requires two-thirds ampere at 220 volts. What is the motor's efficiency?

28. Connect the primary of a bell-ringing transformer to the A. C. lighting circuit. To the secondary connect several lamps or other devices of suitable voltage. Measure the current and voltage of primary and secondary circuits and explain relationships.

29. Place a few dry cells in series with an electromagnet. Complete the circuit by touching two bare wires together. Break the circuit by separating the wires while holding the bare ends in the fingers. Repeat the experiment without the coil in the circuit. Explain the effects in both cases.

30. A transformer is designed to step down from 120 volts to 6 volts. If the primary is wound with 1280 turns of wire, how many turns should there be in the secondary coil?

31. A current of 5 amperes is sent through the primary of a transformer at 1100 volts. How many 50-watt lamps can be lighted when connected to the secondary of this transformer, assuming its efficiency to be 98%?

FOR THE APPRECIATION OBJECTIVE PRIMARILY

32. Prepare a report on the important contributions in the field of electricity of the following: Oersted, Faraday, Henry, Edison, Lenz.

33. Discuss the social and economic aspects of the fact stated by a reputable engineer that the United States with only 17% of the world's population is using 48% of the present world's electrical power.

34. Discuss the advancement in the industrial world and in the home sug-

gested by the statement often made that the average household, through the use of electrical appliances, motors, etc., now enjoys the equivalent of the services of 40 slaves of the times preceding the use of electrical power.

35. Prepare and give a report on "The Present and Future Possibilities in Electrification."

36. List the vocational opportunities in the electrical field, giving the required training and possibilities in each field.

SUGGESTED SUPPLEMENTARY ACTIVITIES FOR CAPABLE PUPILS

1. Prepare a list of the various types of compasses in use. Describe those you consider most important.

2. Prepare and give a class report on the magnetic surveys conducted by the Carnegie Institute, the type of ship, instruments used, nature of observations made, etc. See *Sc. Am.*, Sept. 1928.

3. Consult various scientific periodicals and report on McMillan's study of magnetic conditions in polar regions.

4. Report on instruments and observations of magnetic phenomena by Commander Byrd.

5. Investigate and report on how a jeweler demagnetizes a watch and how a watch may be shielded from magnetic effects.

6. Give an explanation with diagram of the doorbell system in a large apartment building or the bell signal system in your school.

7. Examine one or more automobile starter-generators and report to class with drawings and explanations.

8. Explain the earth inductor compass as used by Lindbergh and others in airplane flights. (See Duff and Weed or magazine articles.)

9. List the various types of D. C. motors, giving the advantages, disadvantages, and uses of each type.

10. Prepare a list of the different types of A. C. motors.

11. Explain, with diagram, the use of motor starting resistances, such as those on a street car system.

12. Give an explanation of the prin-

ciple of self-induction and list a few devices making use of this principle.

13. Explain how you would determine the r. p. m. necessary for an eight pole generator to produce 60 cycle A. C.

14. In an electrical appliance shop, one motor driven egg beater was labeled "A. C. or D. C." while another type was labeled "A. C." Suggest the probable differences in the two motors.

15. Test the efficiency of a laboratory motor at various loads, calculate the efficiency at each load, construct and interpret a graph showing the relationship between efficiency and load.

16. Test a commercial type transformer and obtain its efficiency at different current loads. Construct and interpret a graph showing the results.

17. Prepare a report, with diagrams, of the high tension lines leading out of your city, indicating types of generators, transformers, sub-stations, voltages, insulators, etc.

18. Compare the economy of using a doorbell transformer with the use of dry cells on doorbell circuits.

19. Investigate and report on one or more systems of railway electrification.

20. Report on the common methods of lighting trains.

21. Report on the recent types of oil-electric engines for train service.

22. Report on various types of magnetos and their use.

23. Visit a hydro-electric power plant (or a steam power plant) and prepare a report on the production of electrical power.

24. Determine the horsepower of a laboratory motor.

25. Demonstrate experimentally the choking effect of self-induction by means of a suitable low resistance coil with a movable iron core in series with a lamp on an A. C. circuit. Compare with the results obtained on a D. C. circuit.

REFERENCES

Adams, J. D. Experiments with 110 Volt Alternating Current. New York: Modern Publishing Company, 1920.

DeLano, R. B. Applied Electricity. Chicago: D. C. Heath & Co., 1924. Some good projects.

Farmers' Bulletin No. 1430. Power for the Farm from Small Streams. 5c.

Bureau of Standards Circulars: No. 55, Measurements for the Household, 25c. No. 75, Safety for the Household, 25c.

Bliss, Howard H. Elements of Applied Electricity. New York: Henry Holt & Company, 1925.

Gear, H. B. Electric Service Distribution Systems. 1926.

Pannel, E. V. High Tension Line Practice. 1926.

Timbie. The Elements of Electricity. New York: J. Wiley & Sons.

Timbie. The Essentials of Electricity. New York: J. Wiley & Sons.

Timbie and Higbee. Essentials of Alternating Currents. New York: J. Wiley & Sons, 1919.

Timbie and Higbee. Alternating Current Electricity and its Application to Industry. New York: J. Wiley & Sons.

Keene, E. S. Mechanics of the Household. New York: McGraw-Hill Book Co., 1918.

Jameson, P. R. The Compass the Signpost of the World. Taylor Instrument Company, Rochester, N. Y., 1915.

UNIT X

ELECTRICITY IN COMMUNICATION

(Ultimate aims—leisure time, vocational, social)

COMMON ACTIVITIES FOR ALL PUPILS

FOR THE KNOWLEDGE OBJECTIVE PRIMARILY

1. (a) List the means of communication in which electricity is an important factor. (b) By aid of a diagram explain the operation of the essential parts of

a simple telegraph to send messages one way.

2. Discuss the function of the relay in a commercial telegraph system.

3. Describe a telephone receiver.

4. Name the essential parts of a telephone circuit.

5. Describe a simple microphone and explain what it accomplishes.

6. Explain the construction and operation of the microphone transmitter.

7. Sketch, describe, and explain the transformer as used in our telephone circuits.

8. Sketch and explain the operation of a complete one-way telephone system.

9. Discuss the nature of energy waves as manifested by the following: water wave, heat wave, sound wave, light wave, and electromagnetic wave.

10. State the relation between velocity, wave length, and frequency.

11. Show how it was proved experimentally that the discharge of a Leyden jar, or any other condenser, through a circuit was oscillatory.

12. Discuss electrical resonance and give the "set up" of a simple experiment to demonstrate it.

13. Explain inductance and capacity.

14. State and explain what must be necessary conditions for two electric circuits that they may be in resonance.

15. In our modern sets how is this electrical resonance obtained?

16. On what principle do the modern detectors of electric waves operate?

17. Apply this principle to the coherer, the crystal detector and Fleming's vacuum tube.

18. Make a diagram of a simple receiving station using a crystal.

19. Make a similar diagram of a simple sending station using a spark transmitter.

20. Explain the function of the aerial wires.

21. In radio telegraphy how do two stations prevent interference by other stations?

22. Explain the theory and application of the three element audion tube as devised by DeForest.

23. Diagram a receiving circuit using a DeForest three element tube and explain how it functions.

24. Explain what is meant by radio amplification.

25. Explain what is meant by audio amplification.

26. Explain the function of the "C" battery.

FOR THE TECHNIQUE OBJECTIVE PRIMARILY

27. Radio Station KSTP broadcasts on a wave length of 205.4 meters; what is the frequency of this station?

28. Station WCCO uses a frequency of 810 kilocycles. Calculate its wave length.

29. Explain the difference between a direct-coupled and loose-coupled circuit.

30. (a) Explain the difference between a quenched spark and an ordinary spark. (b) Show why the former is better. (Damped and undamped waves.)

31. Diagram a circuit having at least one stage of radio amplification.

32. Diagram a circuit having at least one stage of audio amplification.

33. Combine the two circuits above drawn.

34. Report on trickle chargers (dry and liquid).

35. What is the function of the oscillation transformer in a radio transmitter?

36. Explain the function of the condenser in telephony.

FOR THE APPRECIATION OBJECTIVE PRIMARILY

37. Since electromagnetic waves are transmitted by means of ether, as are those of heat and light, find out whether or not they may be similarly reflected, refracted, and polarized.

38. Show what contribution each of the following men made to the development of radio: Clerk Maxwell, Henry, Lord Kelvin, Edison, Fedderson, Hertz, Marconi, Sir Oliver Lodge, Fleming.

39. Discuss the various forms of aerial circuits.

40. Discuss the history and the development of amateur and commercial short wave transmission.

41. Report on the opportunity that there is in: (a) The manufacturing of sets. (b) The selling of sets. (c) In broadcasting studios.

42. List the various rectifiers used in amateur receiving stations.

43. Report on the use of the DeForest audion as a telephone relay and amplifier.

44. Explain the duties of a practical operator.

45. Report on the history of the telegraph system.

46. Report on the history of the telephone.

47. Discuss the opportunity offered in either the telegraph or telephone industry today for the serious minded young man or woman.

SUGGESTED ADDITIONAL ACTIVITIES FOR CAPABLE PUPILS

1. Report on loop aerials.

2. Report on the photo electric cell, its construction and how it operates.

3. Explain television as it is now developed.

4. Explain the meaning of a resistance coupled amplifier.

5. Explain what is meant by an impedance coupled amplifier.

6. Explain what manufacturers mean when they advertise a set with tuned radio frequency.

7. Diagram a conventional neutrodyne circuit.

8. Explain the meaning of harmonic frequencies.

9. Explain the construction and operation of either the A or B eliminator.

10. Report on wave meters.

11. Explain how radio tubes are tested.

12. Explain radio beacons and direction finders. (Radio compass).

13. Report on some of the more fundamental radio laws.

14. Explain the action of the quartz crystal as used in most broadcasting stations today to control their wave lengths.

15. Report on ocean cables.

16. Explain the use of the filament and the plate in a vacuum tube.

17. Explain why a telephone receiver cannot be used as a detector without other apparatus.

18. State the difference between damped and undamped waves.

19. Show why either the inductances or the condensers in a radio set may be

used in tuning. Which is usually used?

20. Compare the action of the electron tube to a relay.

21. Explain the difference in construction and use between a rheostat and a potentiometer.

22. Make a report on the symbols used in radio diagrams.

23. Report on the carborundum detector.

24. Explain the Armstrong regenerative circuit and show how it is now used.

25. Explain the function and operation of an added inductance coil in the antenna circuit.

26. List some of the difficulties met with in long distance transmission. Explain why short wave sets, as developed by the amateur operators, are best for this.

27. Explain what qualifications must be fulfilled to become a licensed radio operator.

28. Report on any part of a reference in the following list.

REFERENCES

Sterling. Radio Manual. New York: VanNostrand Co., 1928.

Manly. Auto Radio Battery Care and Repair. 1928.

Burns. Radio. 1928.

Loomis. Radio Theory and Operating. Washington, D. C.: Loomis Publishing Co.

Bliss. Elements of Applied Electricity. New York: Henry Holt and Company. 1928.

Jackson and Black. Elementary Electricity and Magnetism. New York: MacMillan Company. 1920.

Stone. Elements of Radio-Telegraphy. New York: VanNostrand Company. 1923.

Robinson. Manual of Radio-Telegraphy and Telephony. Annapolis, Md.: U. S. Naval Institute, 1924.

Bucher. Practical Wireless Telegraphy. New York: Wireless Press, 1918.

Principles Underlying Radio Communication. Washington, D. C.: Signal Corps. Pamphlet No. 40. Government Printing Office, 1921.

Fleming. Principles of Electric Wave Telegraphy. New York: Longman, Green and Company, 1919.

Van DeByl. *The Thermionic Vacuum Tube and Its Application*. New York: McGraw, Hill Book Company, 1920.

Year Book of Wireless Telegraphy. London: Wireless Press.

Bueher. *Wireless Experiments Manual*. New York: Wireless Press, 1919.

Fleming. *Elementary Manual of Radio Tele-*

graphy and Radio Telephony. New York: Longman's, Green and Company, 1918.

Goldsmith. *Radio Telephony*. New York: Wireless Press, 1918.

Pupin. *From Immigrant to Inventor*. New York: Scribner, 1924.

Downing. *Our Physical World*. Chicago: University of Chicago Press, 1924.

UNIT XI

ELECTRO-CHEMISTRY

(Ultimate aims—exploratory-vocational, social-domestic, leisure time)

COMMON ACTIVITIES FOR ALL PUPILS

FOR THE KNOWLEDGE OBJECTIVE PRIMARILY

1. Make a report on the conductivity of electricity by various solutions.
2. Perform a simple experiment to verify your report.

3. Explain the theory of dissociation, or ionization. (Behavior of ions in solution).

4. Explain the theory of electrolysis.

5. Describe in detail the electrolysis of water, sketching the apparatus.

6. Perform the experiment of the electrolysis of water.

7. Give in detail the process used either in the purifying of copper or the manufacture of aluminum.

8. Explain the process of copper or silver plating a brass bar.

9. Give an explanation of the process of electrotyping.

10. Review these terms: Electrolyte, Ion, Dissociation, Anode, Cathode, Electrolysis.

11. Give the mechanical construction of the lead storage cell.

12. Distinguish between primary and secondary, or storage cells.

13. Explain the chemical action of a lead storage battery both for charge and discharge.

14. Give the mechanical construction of the Edison storage cell.

15. Show why only a direct current can be used in charging a storage battery or in the process of plating.

16. List as many devices as you can that rectify A. C. into D. C.

17. Explain the action of at least one of these rectifiers.

18. Explain how galvanizing of iron with zinc or tin differs from electroplating.

19. Show why the specific gravity of the electrolyte in a lead storage battery is an indicator of the condition of charge.

20. A storage battery is rated at 120 ampere hours. Explain what this means.

FOR THE TECHNIQUE OBJECTIVE PRIMARILY

21. Explain electrochemical equivalent.

22. Find the time it will take 5 amperes to deposit 15 grams of copper from a copper nitrate bath.

23. A plate is immersed in a silver nitrate solution for 2 hours and is found to have gained 20 grams in weight. Find the strength of the current used.

24. Find the current needed to deposit one pound of copper in one hour.

25. (a) Find the weight of hydrogen formed in 15 minutes from the decomposition of water by a current of 10 amperes. (b) If one liter weights 0.09 gm., how many c. c. will there be under standard conditions?

26. Find the number of ounces of aluminum deposited by a current of 150 amperes in 8 hours.

27. If it requires 22 kilowatt hours of electricity to deposit one kilogram of aluminum, find the cost of extracting 1 lb. of this metal when electricity sells for 2 cents per kw. hr.

28. A submarine is equipped with 60 large cells of 5000 ampere-hour capacity. When discharged at a 3 hour rate, its voltage is 110. Calculate the horsepower it furnishes for this time.

29. A storage battery of 60 cells, each having an E. M. F. of 2 volts and an internal resistance of 0.01 ohms, lights 10 lamps joined in parallel. If the line resistance is 0.5 ohm and each lamp has 120 ohms, calculate the total current the battery supplies.

30. Diagram an electric circuit showing the "hook up" for charging a battery.

FOR THE APPRECIATION OBJECTIVE PRIMARILY

31. What is meant by triple plate and what are its advantages?

32. Name the classes of work in which the lead plate and the Edison storage batteries, respectively, are particularly valuable.

33. Give a short history of the storage battery.

34. Name as many different makes of batteries as you can.

35. Visit a battery factory or an engineering establishment and make a report on it.

36. Report on the opportunities offered in either of the establishments in (35) giving the number of persons employed, wages offered, working conditions, and chances of advancement.

37. Explain the electrolysis of city waterpipes and show what means they use to prevent this.

38. Make a historical report of several of the men who discovered and developed the field of electro-chemistry.

39. Report on the care of the storage battery.

40. Report on the farm lighting and power plants.

41. (a) If a battery is to be laid up

for the winter, tell what care it should receive. (b) Explain wet and dry storage.

SUGGESTED SUPPLEMENTARY ACTIVITIES FOR CAPABLE PUPILS

1. Give the laws of electrolysis.

2. Explain the chemical action of the Edison storage battery.

3. Explain what tests other than the hydrometer must be made to accurately determine the true condition of a storage cell.

4. Explain the detailed process of gold plating a cup by electrolysis.

5. Explain the construction and theory of operation of some electrolytic device used to rectify A. C. to D. C.

6. Report on the electrical characteristics of both the lead and the Edison storage cells.

7. Test several cells using the hydrometer and the voltmeter on both open and closed circuits.

8. Report on the importance of electro-chemistry.

REFERENCES

The Mystery of the Black Box Explained. Philadelphia Storage Battery Co.

Jackson and Black. Elementary Electricity and Magnetism. MacMillan, 1920.

Sterling Radio Manual. VanNostrand Company.

Instructions for Weston Fault Finder. Weston Electrical Instrument Company, Newark, New Jersey.

Bliss. Elements of Applied Electricity. New York: Holt & Company, 1925.

Loomis. Radio Theory and Operation. Washington, D. C.: Loomis Publishing Company, 1927.

Timbie. Elements of Electricity. New York: Wiley and Sons, 1916.

U. S. Bureau of Standards. Operation and Care of Vehicle Type Batteries. Circular Number 92, July 7, 1920.

UNIT XII

PHOTOGRAPHY AND PICTURE PROJECTION

(Ultimate aims—leisure time, health, exploratory-vocational)

(The letters k, i, a, t, in this and succeeding units refer to the knowledge, interest, appreciation, and technique objectives, respectively)

COMMON ACTIVITIES FOR ALL PUPILS

1. (i) Write a paragraph on an interesting experience with a kodak or camera.
2. (k) Draw a simple diagram showing the *essential* parts of a camera, and label the parts.
3. (k) Show how a modern camera differs from a pin-hole camera. Explain the advantages of the former.
4. (a) Show how expert acquaintance with a camera demands a knowledge of lenses.
5. (k) Show how the eye is like a camera by drawing a diagram of the eye and comparing it with the simple camera.
6. (a) Show how a knowledge of image formation by lenses depends upon a knowledge of light refraction.
7. (k) Explain what refraction of light is and what it is caused by.
8. (k) Draw a diagram showing the path of a ray of light passing (1) from air into water or glass, and (2) from water or glass into air.
9. (k) Explain what determines the amount of refraction or bending.
10. (k) Explain the meaning of the term, index of refraction.
11. (t) Draw a diagram showing a ray of light passing through a double convex lens of crown glass, index of refraction $3/2$ or 1.5 .
12. (k) Distinguish between the terms, light wave and light ray.
13. (k) Show what the cause of light waves is supposed to be.
14. (k) Draw a diagram showing the formation of a real image by a convex lens, illustrating the principle of both the camera and the eye.
15. (k) Draw a diagram showing how a convex lens may be used as a simple magnifying glass to form a virtual image.
16. (k) Show how a real image differs from a virtual image.
17. (k) Draw a simple diagram showing the arrangement and kinds of lenses used in a projection lantern.
18. (k) Draw a diagram showing how the objective lens in (17) forms the image on the screen.
19. (k) Explain the nature of the image formed by the objective lens, in (17) whether real or virtual, inverted or erect, large or small, and distance from the lens in terms of focal length.
20. (k) Explain clearly what is meant by the principal focus and focal length of a lens.
21. (k) Explain (1) how convex lenses differ from concave lenses, and (2) the significance of the terms, (a) plano-convex and concave, (b) meniscus convex and concave, (c) double convex and concave. Draw diagrams of these lenses.
22. (k) Explain the meaning of the terms diverging and converging.
23. (k) Explain the purpose of the condensing lens in a projection lantern.
24. (k) Show what seems to determine the kind of an image formed by a convex lens.
25. (t) Experimentally determine the focal length of a double convex lens.
26. (t) Experimentally determine the kind of image formed by a double convex lens when the object is (1) more than twice the focal length, (2) at approximately twice the focal length, (3) between once and twice the focal length, and (4) less than the focal length. Describe the image in terms of (a) real or virtual, (b) inverted or erect, (c) large or small or same size, (d) distance from lens in terms of focal length.
27. (a) Test each of your eyes by use of a testing chart, holding a screen in

front of each eye while testing the other. Have a companion verify your reading of the letters in the various rows. Stand at a distance of 20 feet from the chart, and find which line you can read with no errors, for each eye in turn.

28. (k) Name three common refractive errors of the eye.

29. (k) Show in general what is one cause of each error and the type of lens used to correct it.

30. (a) Prepare an outline of points to be observed in the proper use and care of the eyes.

31. (k) Show by a simple diagram the relative position of the parts in a reflectoscope used to project pictures or post-cards.

32. (k) Explain, in general, how a moving picture camera is (1) like, and (2) unlike a common camera.

33. (k) Show, in general, how a motion picture projector is (1) like, and (2) unlike an ordinary slide projector.

34. (k) State the formula which shows the relationship of size of image and object to their respective distances from the lens.

35. (k) State the formula showing the relationships among object distance, image distance, and focal length of lenses.

36. (t) A child 3 ft. tall is 8 ft. from a camera which has a lens of 4 inch focal length. Find the height of the picture of the child.

37. (t) An object is at a distance of 75 cm. from a converging lens of 50 cm. focal length. Find the position and size of the image.

38. (a) Make a list of vocations associated with the work of this unit.

SUGGESTED ADDITIONAL ACTIVITIES FOR CAPABLE PUPILS

1. (i) A cat when dropped back downward lands upon its feet. Show how its movements during the fall may be analyzed.

2. (i) Investigate and report on colored photography.

3. (a) List the points in the historical development of one of the following: kodak, color photography, "talking movies."

4. (i) List the precautions to be observed in taking pictures with a camera.

5. (t) If a motion-picture film is 1 inch wide and the picture on the screen is 10 ft. wide, find the relative intensity of light on the film and one the screen.

6. (t) A motion-picture projector is located on a balcony above the level of the center of the screen. (a) Compare the width of the top and bottom of the picture, and (b) show why it is difficult to focus the picture properly.

7. (i) Investigate and report on "faked" scenes in motion pictures.

8. (i) Show how "enlargements" are made in photography.

9. (a) Explain the principle and use of "luxfer" prism glass.

10. (i) Make a mounted collection of interesting "snap-shots."

11. (i) Make a mounted collection of "freak pictures."

REFERENCES

Eastman Kodak Company. Kodakery. March, 1928.

Eyesight Conservation. Bulletin 4. Eyesight Conservation Council, Times Building, New York City.

Downing, E. R. Our Physical World. Chicago: University of Chicago Press, 1924. Ch. XIII.

Bolas, Thos. and Brown, G. E. The Lens. New York: Tenant and Ward, 1902.

Gage and Gage Optic Projection. Ithaca, N. Y.: Comstock Publishing Company, 1914.

Orford, H. Modern Optical Instruments. London: Sir Isaac Peteman and Sons.

Thomson, Edgar S. Your Eyes and Their Care. New York: D. Appleton Co., 1929.

UNIT XIII

TELESCOPES AND MICROSCOPES

(Ultimate aims—leisure time, exploratory-vocational, social-civic)

COMMON ACTIVITIES FOR ALL PUPILS

1. (a) Name five of the largest telescopes in the world and designate whether they are reflecting or refracting telescopes.

2. (a) Explain the essential difference between reflecting and refracting telescopes.

3. (a) Make a list of five specific discoveries made possible through the invention of the telescope.

4. (a) List (a) five specific uses of the microscope and (b) five specific discoveries made possible because of the microscope.

5. (a) Write a short paragraph showing the relationship of a study of pure science to applied science.

6. (a) Show why a study of simple lenses is necessary to an understanding of the structure of telescopes and microscopes.

7. (k) List the lenses used in constructing (1) a simple astronomical telescope, (2) a simple terrestrial telescope, (3) a simple opera glass, (4) a simple microscope, (5) a compound microscope, (6) a periscope.

8. (k) From the lists in (7), show the function of each of the lenses mentioned, by referring it to cases of image formation in lenses, specifying where the lens is placed with reference to the object, in terms of focal length; and designating in each case what constitutes the object for each lens.

9. (k) Make a list of vocations associated with a study of telescopes and microscopes.

10. (k) Set up some simple lenses to form (1) a simple astronomical telescope, (2) a single simple opera glass.

11. (t) Compute the magnifying power of the two devices in (10).

12. (t) Explain whether or not the image formed by a compound microscope is inverted and why?

13. (t) Find the approximate magnifying power of a microscope having a

tube 190 cm. long, if its eye piece has a focal length of 2.5 cm., and the objective a focal length of 3.2 mm.

14. (t) Explain what the respective focal lengths of objective and eye piece in an astronomical telescope should be in order to give greatest magnification.

15. (t) Explain how it is possible to see the entire image with a telescope whose tube has a diameter less than the size of the virtual image formed by the eye piece.

16. (k) Draw a diagram to show the lenses in a terrestrial telescope with approximate positions of object and image for all lenses.

17. (h) Read and report on one article on telescopes or microscopes.

SUGGESTED ADDITIONAL ACTIVITIES
FOR CAPABLE PUPILS

1. (t) Find and solve any problems you may find in text-books, on telescopes, or microscopes.

2. (h) Read and outline any interesting articles you may be able to find on telescopes or microscopes.

3. (i) Make a telescope of some kind.

4. (a) Write a theme on the history of telescopes or microscopes.

REFERENCES

Downing, E. R. *Our Physical World*. Chicago: University of Chicago Press, 1924. Ch. XII.

Heather, J. F. *Optical Instruments*. London: Crosby, Lockwood & Son. Chs. V, VI.

Collins, A. F. *The Book of the Microscope*. New York: D. Appleton & Co., 1923. Scientific American Publishing Company. *Amateur Telescope Making*, 1926.

Royal Microscopical Society. *The Microscope*. London. 1928.

Proctor, R. A. *Half-hours with the Telescope*. New York: Longmans, Green & Co., 1926.

Bell, Louis. *The Telescope*. New York: McGraw Hill, 1922.

UNIT XIV

LIGHT PROJECTORS

(Ultimate aims—exploratory-vocational, leisure time)

COMMON ACTIVITIES FOR ALL PUPILS

1. (a) Explain the general construction of the headlight on an automobile and the relative position of the parts.

2. (k) Explain the general purpose of each part.

3. (a) Explain why an understanding of headlights and searchlights is dependent upon an understanding of reflection and refraction.

4. (k and t) Set up a plane mirror and experimentally determine how a ray of light from an object in front of the mirror is reflected from the mirror.

5. (k) State and explain the meaning of the law of refraction of light.

6. (k) Using a diagram, show how the law of reflection operates in reflection from a convex mirror and a concave mirror, respectively.

7. (k) Using a diagram, show how an image is formed by a plane mirror, and how rays from the object to the mirror are reflected to an eye. Explain why this image is called a virtual image, what its size is, and where it is situated.

8. (k) Explain the meaning of the terms: focal length, principal axis, and center of curvature.

9. (k) Show by a diagram, the position of an image formed by a concave mirror when the object is (a) more than twice the focal length, and (b) less than the focal length. Show which is called virtual and which real, and why. Also show which is erect and which inverted.

10. (k) Name two devices which are applications of the cases of image formation cited in (9).

11. (k) Show by a diagram the position of an image formed by a convex mirror and whether it is real or virtual, erect or inverted, and how large it is.

12. (k) Cite a practical application of (11)

13. (h) Read a description of some

large searchlight and make a list of descriptive items concerning it.

14. (k) Show by simple diagrams how rays from a light are reflected when the light is placed a considerable distance from a concave mirror and moved slowly nearer the mirror.

15. (k) Repeat (14) for a convex mirror.

16. (t) Experimentally determine the focal length of a concave mirror and describe your method.

17. (k) Using a concave mirror, obtain images of an object at more than twice the focal length, between once and twice the focal length, and less than the focal length. State the position of the image when the object is at the focal length, and infinitely far away, respectively.

SUGGESTED ADDITIONAL ACTIVITIES
FOR CAPABLE PUPILS

1. (k) With diagrams to aid you, work up an article on the different kinds of automobile headlights.

2. (k) Find out what kinds of searchlights are being used.

3. (i) Find out what the rules are for the use of automobile headlights.

4. (i) Discover the use of searchlights in flood-lighting.

5. (i) Read and report on lighthouses and their lights.

6. (i) Read and report on electrical advertising.

REFERENCES

Nela Lamp Works, Engineering Department. Lighting Airway Roof Signs. Booklet X-3, October 20, 1928.

Brown, W. C., Nela Lamp Works. Electrical Advertising. Bulletin 50-A, April 1, 1927.

Haas, O. F. and Sharp, H. M., Nela Lamp Works. Night Lighting for Outdoor Sports. Bulletin 31, November 5, 1925.

Johnson, W. M., Nela Lamp Works. Light-

ing the Motorcoach. Bulletin 49-A, September 12, 1927.

Haas, O. F. and Reid, K. M., Nela Lamp Works, Bulletin 54, Oct. 30, 1928.

Egeler, C. E. and Farnham, R. E., Nela Lamp Works. Picture Projection with Mazda Lamps. Bulletin 33-C, January 1, 1929.

Nerz, F. Searchlight. London: A Constable & Company, 1907.

Bray, F. Light. London: Arnold, 1927.

Houston, J. E. The Wonder Book of Light. New York: A. F. Stokes Company, 1908.

Sylvester, C. and Ritchie, T. E. Modern Electrical Illumination. New York: Longmans, Green & Company.

Putnam, G. R. Lighthouses and Lightships of the U. S. Boston: Houghton, Mifflin, 1917.

UNIT XV

COLOR AND SOME OF ITS PHENOMENA

(Ultimate aims—leisure time, exploratory-vocational, social-domestic)

COMMON ACTIVITIES FOR ALL PUPILS

1. (a) Outline the varieties of experiences which we all have which are associated with color.
2. (k) Explain how color is supposed to be determined by wave length.
3. (k) Show how wave length is dependent on frequency of vibration.
4. (t) Explain how mixed colors may be analyzed by a prism.
5. (k) Explain the difference among (a) light giving bodies, (b) light reflecting bodies, (c) light diffusing bodies, (d) opaque bodies, (e) transparent bodies, (f) translucent bodies, (g) light refracting bodies.
6. (a) Explain, in a general way, how primary and secondary rainbows are formed, and the conditions necessary for their formation.
7. (k) Explain what is meant by a pure color.
8. (t) Show how a pure red in daylight becomes practically black in mercury vapor light.
9. (a) List the essential parts of a spectroscope, and after each, state its particular function.
10. (a) Show one truth which has been discovered which is due to the spectroscope.
11. (k) Explain how a spectroscope is made use of in qualitative analysis in chemistry.
12. (t) Explain why a pure red and a pure green glass placed together prevent passage of white light.
13. (k) Show what white light is.
14. (k) Show what black is.
15. (a) Explain the cause of a bright line spectrum.
16. (a) Show what a continuous spectrum is and to what it is due.
17. (t) Explain the cause of the color of light giving bodies.
18. (t) Explain the cause of the color of opaque bodies.
19. (t) Explain the cause of the color of transparent bodies.
20. (t) Explain the principle of the determination of the color of mixed paints.
21. (t) Explain the principle of the color disc in mixing colors and contrast it with mixing paints.
22. (k) Show how and why artificial illuminants affect the color of bodies. Illustrate.
23. (k) Explain what color blindness is, how it may be tested, and a supposed cause.
24. (a) Show what waves other than light waves are included in the rays from the sun, what effects made them known, and how much of the spectrum they form.
25. (t) Show how a prism may be used to synthesize and combine colors.
26. (a) Show by an illustration, what a phosphorescent body is and what a fluorescent body is.
27. (k) Show how each of phosphorescence and fluorescence is produced.
28. (t) Explain the principle of radium paint.

29. (a) Explain the relations of a study of color to (a) the chemist, (b) the photographer, (c) the motion picture producer, (d) the artist, (e) the printer, (f) the advertising specialist, (g) the window trimmer, (h) the designer, (i) the stage engineer, (j) the lighting expert, (k) the lens designer.

30. (a) Mention at least one problem in color whose solution is now being sought.

31. (h) Read at least one current periodical article on color, and give the title, number, and date of the periodical.

SUGGESTED ADDITIONAL ACTIVITIES FOR CAPABLE PUPILS

1. (a) Prepare a report on the spectrum of the sun.

2. (k) Prepare a report on the spectroscope, its structure and uses.

3. (t) Show why the spectrum of the sun is not continuous, and explain what causes Fraunhofer lines.

4. (k) Prepare a report on three color printing.

5. (a) Explain the color in a soap bubble or film of oil.

6. (k) Prepare a report on color photography.

7. (k) Show what is meant by polarized light, and give one practical use.

REFERENCES OTHER THAN TEXT BOOKS

Houston, J. E. *The Wonder Book of Light*. F. A. Stokes, 1908.

Vanderwalker, F. N. *The Mixing of Colors and Paints*. Chicago: F. J. Drake & Company, 1924.

Luckiesh, M. *Ultraviolet Radiation*. New York: VanNostrand, 1922.

Saunders, Vivian T. *Light*. London: John Murray, 1927.

Reiser, O. L. *The Alchemy of Light and Color*. New York: W. W. Norton & Company, 1928.

Luckiesh, M. *Visual Illusions*. New York: VanNostrand, 1922.

Miskella, W. J. *Practical Color Simplified*. Chicago: Finishing Research Laboratories, 1928. Vol. I.

UNIT XVI

MUSICAL INSTRUMENTS AS APPLICATIONS OF THE LAWS OF SOUND

(Ultimate aims—leisure time, exploratory, vocational, social)

COMMON ACTIVITIES FOR ALL PUPILS

FOR THE KNOWLEDGE OBJECTIVE PRIMARILY

1. Explain how a stretched metal wire may be made to vibrate, and show how you may prove that it does actually vibrate.

2. Show how the length of the string determines the rate of vibration. Illustrate and state the law.

3. Show how the tension on the string determines the rate of vibration. Illustrate and state the law.

4. Show how the diameter affects the vibration rate.

5. Explain how each of these laws is made use of in the construction of a piano.

6. Explain what causes variations in pitch.

7. Explain what causes variations in loudness.

8. Explain the difference between the fundamental and overtones, and what causes each.

9. Explain what is meant by quality of tone and account for variations in quality.

10. Explain what is meant by a major triad? What major triads form the basis of the diatomic scale?

11. Build up a diatomic scale from a key-note having 264 vibrations a second, using major triads as the bases.

12. Explain what a tempered scale is and why it is considered essential.

13. Show how the tempered scale differs from the diatomic scale.

14. Explain, (1) how the sound is produced, and (2) how the pitch is

changed in the following instruments: flute, clarinet, cornet, trombone, violin, saxophone, piano, organ.

15. Explain why there is a difference in quality between open and closed organ pipes.

16. Explain and illustrate sympathetic vibrations.

17. Explain and illustrate forced vibrations.

18. Explain what beats are and how they are caused. Show how they may be used to tune two notes to unison.

19. Explain the relationship of beats to discord.

20. List the vocations associated with a study of sound.

FOR THE TECHNIQUE OBJECTIVE PRIMARILY

21. Experimentally verify the law of lengths of strings. Tabulate.

22. Experimentally verify the law of tensions of strings. Tabulate.

23. How long should a closed organ pipe be to give a fundamental tone of C-256?

24. If a closed air column 12 inches long resonates to a certain sound at 68° F., find the pitch of the sound.

25. If a tuning fork having a piece of sealing wax on its prong makes five beats per second with another fork of 288 vibrations, what is its vibration rate?

26. If a string 16 cm. vibrates 320 times a second, find its vibration rate if it is shortened to 12 inches.

27. If a string under 36 lbs. tension vibrates 480 times per second, find its rate under 64 lbs. tension.

28. Find the first four overtones of a string whose fundamental note is C-256. (Give vibration rates, letter, and scale compared with the middle C scale.

29. Build up a tempered chromatic scale on C-256.

30. Explain the principle of the phonograph.

FOR THE APPRECIATION OBJECTIVE PRIMARILY

31. Write a theme on the relation of music to science, contrasting art and science.

32. List all the musical instruments you can.

33. Describe some of Helmholtz's experiments in sound.

34. Show how at least one application of sound was valuable in the war.

35. Write a short theme on the subject of "Sound in the Life of Man."

36. Mention at least one possibility in further applications of the principles of sound.

SUGGESTED ADDITIONAL ACTIVITIES FOR CAPABLE PUPILS

1. Explain and demonstrate some musical instrument showing the applications of the laws of sound.

2. Describe the construction of one of the largest organs in the world.

3. Write a theme on the history of musical instruments.

4. Demonstrate how a musical note may be produced by means of a gas flame and a long glass tube.

5. Find the velocity of sound in metal by Kundt's method.

6. Write a theme on manifestations of resonance in everyday life.

7. Write a theme on quality of sound, how it is determined, and means of demonstrating how this may be proved.

8. Diagram and explain why a closed air column must be approximately one-fourth of a wave length, and an open column one-half a wave length in order to produce resonance.

9. Draw diagrams showing how waves may combine to produce (1) resonance and (2) destructive interference.

10. Write a theme showing the relations between simple harmonic motion, water waves, waves over a field of wheat, waves on a large theatre curtain, and sound waves.

11. Describe some methods of testing hearing.

12. Diagram and explain the ear as a detector of sound waves.

13. Report on current periodical articles touching this field of sound.

14. Report on one or more references in the following list.

REFERENCES

Brewer, E. C. *Sound and Its Phenomena*. 1885.

Bragg, W. H. *The World of Sound*. London: G. Bell & Sons, 1921.

Brown, G. E. *Experimental Science Section VI of Physics. Sound*. Cambridge: University Press, 1924.

Bull, P. G. *Marvels of Sound, Light and Electricity*.

Capstick, J. W. *Sound*. 1922.

Core, T. H. *Modern Discoveries in Sound (In Science Lectures for the People)*. 1888.

Crandall, I. B. *Theory of Vibrating Systems and Sound (Technical)*. 1926.

Estes, D. *Half-hour Recreations in Popular Science*. P. 1-15. 217-49.

Fleming, J. A. *Waves and Ripples in Water, Air and Aether*. London: The Sheldon Press, 1923.

Helmholtz, H. L. F. Von. *Popular Lectures on Scientific Subjects. (First Series)*. P. 61-106. 1888.

Lamb, Horace. *The Dynamical Theory of Sound*. London: E. Arnold, 1925. (Technical).

Williams, A. *The Building of a Piano (In his "How It Is Made")*. London: T. Nelson & Sons, 1907.

UNIT XVII

X-RAYS AND OTHER RADIATIONS

(Ultimate aims—leisure time, exploratory-vocational, health)

COMMON ACTIVITIES FOR ALL PUPILS

1. (a) Make a list showing the specific practical uses of X-rays and ultra-violet rays.

2. (k) Make a list of all the electromagnetic waves so far discovered, and give their wave lengths.

3. (a) State the formula showing the relationships among wave length, velocity, and frequency of vibration.

4. (k) Explain why discharges from static machines and induction coils produce electro-magnetic waves.

5. (a) Read an account of the discovery of X-rays, and in a few sentences briefly describe the events which led to the discovery.

6. (k) State the velocity of X-rays.

7. (k) List the differences between discharges in low and high vacua, respectively, as to (a) voltage required, (b) nature of the discharge.

8. (k) Explain how X-rays are produced.

9. (k) Draw a diagram of one form of modern X-ray tube and label the parts.

10. (k) Explain the use of a fluoroscope with X-rays.

11. (k) Explain how X-ray photographs are made.

12. (a) State the contribution of

Madame Curie and Becquerel to the discovery of radium.

13. (k) Make a comparison between radium rays and X-rays.

14. (a) Show how X-rays are related to health.

15. (k) Show why radium treatments are so expensive.

16. (a) Show how the knowledge of radium makes the change of iron to gold not seem so impossible.

17. (k) Show what effects are produced by infra red rays and ultra-violet rays.

18. (a) Show why you think the invisible waves already discovered, and others which may be discovered, will be put to some practical use.

19. (h) Read at least one current periodical article in the field of X-rays or radium, and jot down the important points made. Give the title, author, and magazine name and date.

SUGGESTED ADDITIONAL ACTIVITIES
FOR CAPABLE PUPILS

1. (i) Report on Millikan and the Cosmic rays.

2. (i) Make a scrap-book containing clippings on X-rays, radium, and related topics.

3. (i) Make some X-ray photographs.
4. (i) Report on types of X-ray tubes and their advantages.
5. (a) Write a theme on the history of our discoveries of radiations.

REFERENCES

Millikan, R. A. *Science and Life*. Boston: The Pilgrim Press, 1924. Ch. II.

Darrow, F. L. *Through Science to God*. Indianapolis: The Bobbs-Merrill Company, 1925.

Kendall, James. *At Home Among the Atoms*. New York: The Century Company, 1929.

Robertson, J. K. *X-Rays and X-Ray Apparatus*. New York: MacMillan Company, 1924.

Clark, G. L. *Applied X-Rays*. New York: McGraw Hill, 1927.

Crowther, J. A. *The Principles of Radiography*. New York: VanNostrand, 1922.

Kaye, G. W. C. *The Practical Application of X-Rays*. New York: Dutton, 1923.

Pullin, V. E. and Wiltshire, W. J. *X-Rays Past and Present*. London: Benn, 1927.

Thompson, S. P. *Light, Visible and Invisible*. New York: MacMillan, 1910.

Mitchell, S. A. *The Fundamentals of Astronomy*. New York: VanNostrand Company, 1927.

DeKruif, P. H. *Sun-Trapper* (in his "Hunger Fighters"). New York: Harcourt Brace, 1928.

UNIT XVIII

SOME SIMPLE MANIFESTATIONS OF GRAVITY

(Ultimate aim—leisure time)

COMMON ACTIVITIES FOR ALL PUPILS

FOR THE KNOWLEDGE OBJECTIVE
PRIMARILY

1. Show what causes a body to roll down hill. How does this force differ from that causing a pitched ball to move?

2. Explain why a projectile shot horizontally takes a curved path.

3. Explain what determines the direction of the path of any moving body.

4. Explain the difference between *mass* and *weight*.

5. Show how the speed is developed in a uniformly accelerated body.

6. Show how the space traveled by a uniformly accelerated body varies with the time.

7. Show how the speed of a uniformly accelerated body varies with the distance traveled.

8. Explain how the distance traveled by a uniformly accelerated body during any second may be determined.

9. Explain the relations of centrifugal and centripetal force.

10. Explain why the earth is flattened at the poles.

11. Give two reasons for bodies weighing more at the poles than at the equator.

12. Explain the principle of the cream separator, the governor on a steam engine, and the centrifugal clothes dryer.

FOR THE APPRECIATION OBJECTIVE
PRIMARILY

1. Show how close astronomers can figure the time at which an eclipse will occur.

2. Write a short biography of Newton.

3. Write a short biography of Galileo.

4. Explain Galileo's famous experiment of dropping two weights from the Leaning Tower of Pisa.

5. Show what keeps the earth in its orbit.

6. Show how a parachute lessens the acceleration of a falling body.

FOR THE TECHNIQUE OBJECTIVE
PRIMARILY

1. Explain how the average speed is obtained for any moving body. Average speed = ?

2. If a body gains 5 ft. per second in speed, find (a) the velocity at the end of the 1st second; (b) the 2nd sec-

ond; (c) the 5th second. If the acceleration is a and the time t , what is v equal to? Find the average velocity for any time t .

3. If a body falls freely, accelerating 32 ft. per second², find the distance it falls the first second.

4. Show how the average velocity for a uniformly accelerated body is $\frac{at}{2}$. If s = average $v \times$ time, show how $s = \frac{1}{2} at^2$, or for a freely falling body $s = \frac{1}{2} gt^2$.

5. Explain how the velocity at any time would be determined if the distance and the velocity are given.

6. Show how the velocity of an accelerating body for any one second may be determined.

7. Experimentally determine the above formulae by a wire stretched at an incline and a suspended pulley with a weight.

8. If a car traveling at the rate of 24 miles per hour is stopped by the brakes in 4 seconds, find the average retardation per second.

9. A stone dropped from a high bridge strikes the water below in 3 seconds. Find the height of the bridge and with what velocity the stone strikes the water.

10. Find the pull on the chain of a 16 lb. hammer if the chain is 4 ft. long and the hammer is rotating with a speed of 20 ft. per second.

11. If a ball thrown over a tree is in the air 4 seconds, find the height it rises and with what velocity it is thrown.

12. Find the acceleration a force of one dyne will produce on a body weighing 1 gram.

SUGGESTED ADDITIONAL ACTIVITIES FOR CAPABLE PUPILS

1. Select a number of problems illustrating the above formulae in any text being used.

2. Construct a gyroscope from an old bicycle by filling the tube with sand.

3. Show how a loop-the-loop works.

4. Show why a bomb dropped from an aeroplane falls east of a point directly below the position from which it was dropped.

5. Explain how a top may be made to spin.

6. Report on recent experiments performed in dropping dummies from airplanes.

7. Report on modern methods of submarine rescue.

8. Report on acceleration and retardation in modern automobiles.

9. Explain how the earth is weighed.

REFERENCES

History of Science Society. Sir Isaac Newton. Baltimore: Williams and Wilkins Company, 1928.

Wilson, Grove. The Human Side of Science. New York: Little Ives Company, 1929.

UNIT XIX

THE AUTOMOBILE

(Ultimate aims—exploratory-vocational, leisure time, social)

COMMON ACTIVITIES FOR ALL PUPILS

1. (a) Indicate some of the reasons why the automobile is a development of the present century, and why its industrial development has probably been more rapid than any other commodity.

2. (a) Name two other industries which have developed in somewhat the same "mushroom" manner as the automobile.

3. (k) Explain the significance of the terms: (a) chassis, (b) clutch, (c) transmission, (d) differential, (e) gears, (f) vacuum feed, (g) universal joint, (h) engine, (i) speedometer, (j) thermo-syphon system, (k) carburetor, (l) ignition system.

4. (k) Indicate some of the more important factors the engineers must consider in the construction of the chassis.

5. (k) List types of springs used in automobiles.

6. (k) List types of shock absorbers used in automobiles.

7. (k) Explain one type of service brakes and of emergency brakes.

8. (k) List types of clutches used in automobiles.

9. (k) Explain the general principle of the gear shift and why it is necessary.

10. (a) Mention some possible improvements in present gear shift practice.

11. (k) Explain the function of the differential.

12. (a) Show advantages and disadvantages of friction in the automobile.

13. (k) Draw a diagram of one type of carburetor and explain briefly how it functions.

14. (k) List the main arguments pro or con on the subject, "Resolved that the vacuum feed system of gasoline supply is better than the gravity or pressure feed system."

15. (a) Explain why a cooling system is necessary in a gasoline engine but not in a steam engine.

16. (a) List the advantages and disadvantages of each of the following: thermo-siphon, pump system, and air-cooled system.

17. (k) Explain how and why valves are timed.

18. (k) Explain the object, construction, and operation of the universal joint.

19. (k) In the ignition system, explain the use of the coil, the timer, and the distributor.

20. (k) Make a list of lubrication systems used.

21. (k) Explain the use of the several protective devices used in the electrical system on a car. Cut-out, fuse, Remy thermostatic switch, etc.

22. (k) Explain why methods of regulation are necessary to control the generator output.

23. (k) Explain the operation of the speedometer.

24. (t) It takes about one horsepower to turn over a motor at 75 R. P. M.

When using a 6 volt battery to supply current to the starting motor, calculate the number of amperes the battery supplies.

25. (t) Explain why cylinders are not timed to fire in the order in which they are arranged on the engine block.

26. (a) Explain the advantages of the balloon tires over the high pressure tires.

SUGGESTED ADDITIONAL ACTIVITIES FOR CAPABLE PUPILS

1. (k) Explain the steps in the manufacture of tires.

2. (k) Show how the automobile engine is tested for its efficiency.

3. (k) Report on the L head; valve in the head; and T head types of engines.

4. (k) Report on the detailed construction and function of various pistons now in use.

5. (k) Discuss the theory of lubrication; classify the various lubricants employed.

6. (k) The front wheels of a car are turned at an angle of 30 degrees in a snowdrift and the hind wheels exert a forward force of 100 lbs. Calculate the useful component on the front wheels.

7. (k) Show how headlights are tested to eliminate unlawful glare.

8. (k) What is meant by automatically advanced ignition and how is it accomplished?

9. (t) What size copper wire should be used in the cable of the starting system if 300 amperes are to be used and the cable is to be 5 feet long and there is only 25 volts potential drop along this cable?

10. (t) When a car is traveling at 30 miles per hour on a level road, it takes 150 lbs. of force to keep it going at this rate. What horsepower does the engine develop?

11. (a) Discuss the topic, "The maintenance of the modern automobile."

12. (a) Prepare a paper on the history of the automobile industry.

13. (k) Report on the liquid fuels

used in internal combustion engines, where obtained, how purified, etc.

14. (k) Explain the sleeve valve motor, its operation, and its advantages.

15. (a) Write a theme on the vocational opportunities offered in the automobile industry today.

16. (k) Report on the testing, adjustment and maintenance of the electrical system in automobiles.

17. (a) Explain the importance of the placement of the center of gravity of the automobile.

REFERENCES

Dyke. Automobile and Gas Engine Encyclopedia. Chicago: Goodhart and Wilcox Company, 1929.

Page. The Modern Gasoline Automobile. New York: Henley Publishing Company, 1928.

Wright. Automotive Repair. New York: Wiley and Sons, 1928.

Kuns. Automotive Essentials. Milwaukee: Bruce Publishing Company, 1928.

The Texas Company. Lubrication. 17 Battery Place, New York. November, 1926.

The Standard Oil Company. Lubrication. Chicago: Standard Oil Company.

Proceedings of the Association*

THURSDAY AFTERNOON SESSION

March 20, 1930

The opening session of the Thirty-fifth Annual Meeting of the North Central Association of Colleges and Secondary Schools, held at the Stevens Hotel, Chicago, Illinois, March 20-21, 1930, convened at two-ten o'clock, President Morgan presiding.

PRESIDENT MORGAN: The time for beginning this session has come, and I should like to establish this record of starting these meetings just as promptly as those who are interested in them will appear.

As you must have observed from this printed program, this session is in charge of the Commission on Secondary Schools. In other words, it is the report of things which have happened in the Commission on Secondary Schools which come before the general Association for report and action.

The first report is that of the business transacted by the Commission on Secondary Education, and it will be given by the Secretary of that Commission, Mr. Brown.

A. MR. BROWN'S REPORT

MR. C. C. BROWN: Mr. Chairman, Ladies and Gentlemen: The Commission on Secondary Schools met on Monday evening for its first session. It has been in session since that time until today at noon. It has been rather difficult to gather the transactions of those meetings together so that I might have them in presentable form. I have done the best I could, however, considering the time that I have had since the noon hour to transfer from the Commission's business to this business.

There were annual reports submitted from approximately 2400 high schools. Each one of these reports was examined by one or two persons and passed upon

by those persons and then by the committee upon which the persons were serving.

As a result of the examinations of those reports we make our recommendations to the Executive Committee relative to the new schools which should be added to the accredited list, those which should be dropped, those which should be warned or advised. I am not correct in that last statement. The warning and advising of schools is a matter which is left entirely in the hands of the Commission, I believe.

There have been 105 new schools recommended to the Executive Committee to be added to the approved list of the Commission for the first time. It is customary to read those names. Shall I follow that procedure, Mr. President?

PRESIDENT MORGAN: I think you may.

MR. C. C. BROWN: I shall read the new schools by states.

... Mr. Brown read the list of schools ...

MR. BROWN: As a result of the committee's report, it was recommended that 6 schools be dropped from the accredited list for the second violation of the same standard or for violation of regulation. These schools are:

Illinois

McHenry Community
North Central College Academy
Goode-Barren Township

Minnesota

Marshall

Missouri

Higginsville

Ohio

Chardon

Seven high schools withdrew from the accredited list, either because they were discontinued as high schools or because it became impossible for them to meet the standards and they submitted no

*A stenotype report.

application for place upon the accredited list. These schools were:

Arkansas

Clarksville

Mountain Home College Preparatory

Iowa

Graceland Academy

Missouri

Fulton: William Woods College Academy

Marble Hill: Will Mayfield College

Ohio

Glendale

Oklahoma

Stillwater: A. & M. College

I believe this requires no action on the part of the Association.

As a result of the reviewing of these reports, 281 high schools were warned for violation of standards, that is the first violation of some particular standard; 148 were advised to make improvements in certain conditions. I think you would not be interested in having me read the names of those 148 high schools that were warned.

The Committee on Standards reported some changes which it felt desirable to make in the standards under which we have been operating. It is necessary for those recommended changes to go before the Executive Committee before they are reported to this body. The Executive Committee has not met since the report of the Committee on Standards, and I understand this part of the report will be made an order of special business at a later session.

New officers were elected for the Commission as follows:

Chairman: L. N. McWhorter, Assistant Superintendent of Public Schools, Minneapolis

Secretary: H. G. Hotz, University of Arkansas, Fayetteville, Arkansas.

Then it was necessary to fill vacancies in the various state committees of the Commission and in the classes. I believe it is not necessary for this body to act upon the officers as we elect our own officers, but it is necessary for this body

to pass upon the members which are nominated for the state committees and classes. We nominate to the Executive Committee and the Executive Committee nominates to you, and I am instructed by the Executive Committee to present this report:

Arizona: J. F. Walker of Tucson, Arizona, becomes Chairman of the State Committee.

Arkansas: M. R. Owens of Little Rock becomes Chairman of the State Committee.

Colorado: A. C. Cross of the University of Colorado becomes Chairman of the State Committee.

Indiana: As advisory member, Superintendent Ray Kuhns of Pierceton.

Kansas: No changes.

Michigan: Advisory member, Superintendent G. C. Malcolm.

Missouri: Advisory member, Superintendent Heber U. Hunt of Sedalia.

Nebraska: Representing the high schools, H. C. Mardis of Lincoln; advisory member, A. H. Staley of Hastings.

New Mexico: A. Montoya, State Department.

Oklahoma: J. A. Holley of the State Department becomes Chairman of the Committee.

South Dakota: R. W. Kraushaar of the State Department becomes a member of the Committee.

West Virginia: Forrest W. Stemple of Morgantown becomes a member of the Committee.

Wyoming: N. D. Morgan of the State Department becomes a member of the Committee, and H. H. Moyer represents the high school interests from Rollins.

In the Class of 1931 there were two new members:

Paul S. Gillespie, High School, Greeley, Colorado.

J. E. Worthington, High School, Waukesha, Wis.

There are no changes in the Class for 1932. Of course, the Class for 1933 is all new; perhaps they have been reappointed, however.

I. E. Ewing, High School, Wheeling, W. Va.

F. D. McElroy, Cleveland School of Education, Cleveland, Ohio.

W. E. McVey, High School, Harvey, Illinois.

L. N. McWhorter, Assistant Superintendent, Minneapolis, Minn.

Rev. F. B. O'Connor, Supervisor of Catholic Schools of Nebraska, Havelock, Nebraska.

George C. Wells, State Department, Oklahoma City, Oklahoma.

I move the approval of the members of these committees as read.

MR. C. O. DAVIS: I second the motion.

PRESIDENT MORGAN: It has been moved and seconded that we approve the list of state chairmen and others interested in the work. Those in favor say "aye"; those who are opposed say "no." The motion is carried, and the report will be continued.

MR. BROWN: The Commission received committee reports on special studies from Mr. Maxwell who will present his report here, a report on libraries by Mr. Miller of Detroit, a report on special study of the assignment of teachers to the fields in which they did their major and minor work in college by Mr. Wells, a special study on the athletic situation in the high schools by Mr. Morley, a report on an experiment being carried on in the Joliet High School and Junior College by Mr. Haggard.

Favorable action was taken upon a request for the privilege of carrying on an experiment at Cornell and also a similar request for experimental work at Tulsa.

The Commission on Higher Institutions was requested to appoint two members to a joint committee to study the information required by colleges of prospective entrants. These are the major items of business aside from the reports.

Each year the Secretary makes a statistical report.

... Mr. Brown read the statistical report* . . .

*This report appeared in full in the June, 1930, issue of the Quarterly.—The Editor.

PRESIDENT MORGAN: The report of the Commission will be continued by Dean C. R. Maxwell of the University of Wyoming. He will give a report on a special study covering two years.

B. MR. MAXWELL'S REPORT AND DISCUSSIONS THEREON

... Mr. C. R. Maxwell read the report on North Central Study for 1928-1929, with the following interpolations:

I might say that an error exists in Table X, Statistics from N. C. A. Higher Institutions. I cannot account for the omission of Purdue University in the list of state universities and state colleges, but it was included in the other list.

Section IV of this table should read "The remainder of the colleges and universities in the North Central Association" rather than "in private institutions", because there are included in that table a few publicly supported institutions, such as some of our municipal colleges.

You will find a comparison of those data in Table IX on Page 577 . . .

PRESIDENT MORGAN: Mr. Secretary, does that complete the report?

MR. C. C. BROWN: Yes.

PRESIDENT MORGAN: The report is completed now and is ready for discussion by those who care to discuss it. That not only refers to the report of the last speaker but to the report of the Secretary as well.

MR. BALDWIN (A. & M. College, New Mexico): Mr. Chairman, I want to make one or two words of comment about the statistics presented in this March number of the Quarterly by Dean Maxwell. I want to make it quite clear that I am not calling in question the value of a study like this. I know the tremendous amount of work that Dean Maxwell must have put into it. Moreover, I know that statistics which may be inaccurate in detail might be accurate enough in the mass to really base some valid conclusions upon them. But I should like to draw attention to a few

of the anomalies that I have noticed in my own state of New Mexico.

Dean Maxwell said in his remarks that apparently a student should pick his college as well as his "prof," and one of the conclusions that he gives in the North Central Quarterly is this: that the success of a student in a higher institution depends largely upon the one that he selects.

There are four institutions in New Mexico that are listed in this table on Statistics from N. C. A. Higher Institutions. There is the New Mexico A. & M. College which I represent, the University of New Mexico, the New Mexico Normal College at Las Vegas, and the Silver City Teachers College. I find the percentage of failures varying very widely, apparently bearing out that conclusion that a student should pick his college as well as his "prof". For instance, for the Normal College the percentage of failures is 10 per cent and for the Silver City Teachers College it is 41.9 per cent. There are two teacher training institutions with a very wide difference in the percentage of students failed.

Then taking the state colleges and state universities which are classed together, the percentage of failures for the A. & M. College is 53.3 per cent and for the University it is 37.1 per cent. There is a big difference between two institutions which are put into the same classification.

Apparently, then, a student in New Mexico who wants to be successful should choose the Normal College at Las Vegas, where there are only 10 per cent of failures; next he should choose the University with 37 per cent of failures, then comes the Silver City Teachers College with 41 per cent, and lastly the A. & M. College with 53 per cent.

Those figures challenged my attention, and I thought they looked rather remarkable, and I checked up on the statistics as far as my own institution was concerned.

I noticed, first of all, that the number of freshmen on which this report was based was only 45. We had a good

many more than 45 freshmen but I quite understood that only freshmen from N. C. A. high schools were included, so I went over the list and picked out the freshmen from N. C. A. high schools and found there were 60. Out of those 60, 17 failed. According to the statistics given in this report, out of 45, 24 failed. So it looked as though the statistics were not only based on insufficient data but were also inaccurate. I am not saying that that is Dean Maxwell's fault. I think it is probably the fault of the person who returned the statistics, in some way or another.

I will say this, that evidently these statistics are not thoroughly reliable, and I believe that we do need more study along this line to improve these statistics before we can base valid conclusions upon them, particularly to say that success depends upon the college which a student chooses. One might just as appropriately point out that the statistics from the high schools vary very widely. In Table II, I noticed that the percentage of failures reported for the state of New Mexico runs all the way from 0 from one high school up to 100 per cent from another high school. So we might draw this conclusion, that a student's success depends upon the institution from which he comes as well as the institution to which he goes. As a matter of fact, I don't believe there is much difference in the standing of the graduates of the various high schools in New Mexico as apparently would appear from that wide variation, all the way from 0 to 100 per cent.

PRESIDENT MORGAN: You have heard the statement which the speaker has made. The maker of the report, first of all, has an opportunity for reply.

MR. C. R. MAXWELL: Might I explain that these data were received from the registrars and certified by the registrars. Possibly this gentleman's registrar furnished him different information from what he furnished me. That would be the only way in which there would be a discrepancy. (Laughter).

MR. BALDWIN: I believe that the registrar is furnished with a list of the students based upon the reports that come from the high schools; then the registrar is furnished with a list and is told to report upon these particular students.

MR. MAXWELL: I might also add that he is requested to add the names of all other students from North Central high schools. You will note that in the instructions that appear in the article.

PRESIDENT MORGAN: I think that gives both sides of the question and leaves the responsibility largely on the registrars. (Laughter) Are there any registrars present? (Laughter) Is there other discussion?

I think a motion is in order to receive the report of the Commission on Secondary Schools and make it a part of the proceedings of this Association.

... Upon motion regularly made, seconded and carried, the report of the Commission on Secondary Schools was accepted . . .

C. COMMITTEE ANNOUNCEMENT

PRESIDENT MORGAN: The next point on the program is a very brief one. It is the announcement of committees for the Association. Part of that work has been done by publishing the names of the Nominating Committee in the March number of the Quarterly. I will repeat them for you:

Thomas W. Gosling, Chairman, Superintendent of Schools, Akron, Ohio.

Eli C. Foster, Principal, Tulsa High Schools, Tulsa, Oklahoma.

Thomas Lloyd-Jones, High School Inspector, University of Wisconsin.

Robert M. Kelley, President, Loyola University, Chicago, Illinois.

There is another committee, the Auditing Committee, which is as follows:

C. R. Maxwell, University of Wyoming, Laramie, Wyoming.

R. Emerson Langfitt, Charleston, West Virginia.

J. A. Larson, Little Rock, Arkansas.

There is still another committee, known as the Time and Place Commit-

tee, which seems to me to be properly vested in the Executive Committee and which will be appointed to take care of that, unless you make some objection. If you are willing to have that Committee fix it, that Committee would like to know whether you have any objection to the present quarters and time. Does anybody make an objection? The Executive Committee is going to consider the matter, and they would like to have any objectors speak. That will be the Committee then. These three committees will report tomorrow morning shortly before noon.

The next part of the program includes the report of the Executive Committee, and that report will be given by the Secretary of the Association who is the Secretary of that Committee. Dean Edmonson.

D. REPORT OF THE EXECUTIVE COMMITTEE

SECRETARY EDMONSON: Mr. Chairman and Members of the Association: I will divide the report of the Executive Committee into two parts. The first part will deal with matters of general information that do not call for any action on the part of the Association. The second part will relate to matters which are brought to you for your consideration.

The Executive Committee has held three meetings during the year, one at the close of the session of 1929, one in November and one on March 19, 1930.

Under the revised Constitution, much responsibility is placed on the Executive Committee for determining the general program of work of the Association.

On November 30, the Executive Committee heard reports from all of the standing committees and special committees of the Association and of the three Commissions. Attention was also given to the planning of the program for the 1930 session.

The Executive Committee authorized that representatives of the North Central Association be appointed to attend the meetings of the other regional associations. President Morgan appointed

the following persons as fraternal delegates: Mr. E. L. Miller, Assistant Superintendent of Schools, Detroit, as delegate to the Association of the Middle States and Maryland; Principal W. I. Early of Sioux Falls, South Dakota, as delegate to the Northwest Association of Colleges and Secondary Schools. At the request of the Executive Committee, President Morgan of the Association represented the North Central at the meeting of the Southern Association.

The Secretary of the Association was appointed the representative on the National Committee on Research in Secondary Education.

The Executive Committee authorized President Morgan to appoint a committee of the Association to further the project of a nation-wide study of teacher training, through funds to be secured from the federal government.

The Executive Committee requested the Commission on Higher Education to study the problem of the standardization of schools of music, art, and other similar schools.

The Executive Committee authorized the Secretary to give publicity to the fact that the Association has never issued any approved lists of textbooks, reference books or laboratory supplies. I might explain that this action was taken because of communications coming to the officials of the Association that certain agents were circulating reports to the effect that books, supplies and laboratory equipment must be purchased in terms of certain lists made up by the Association, which lists were in fact made up by the agents concerned.

The Executive Committee requested the Chairman of the Commission on Secondary Schools and the Chairman of the Commission on Higher Education to cooperate in the establishment of a committee to forward an investigation of needed changes in the present procedure in the formulation and administration of standards for junior colleges.

The Executive Committee instructed the Secretary to prepare and distribute to educational journals more information regarding the general activities of the

Association. The Secretary was also instructed to make arrangements for press service at the 1931 Annual Meeting in order that the local newspapers could be furnished with more complete and more accurate accounts of the activities of the Association.

A newspaper reporter was responsible for that action of the Executive Committee. He came to me yesterday and said, "You know, a newspaper reporter can understand a crime, but it is quite impossible to understand what takes place at the meetings of this Association." (Laughter) Then he added, "Those of you in the field of education criticize newspaper men for playing up crimes. If you would carry on your educational meetings in such a way that we could understand what is going on, we would play up your educational meetings." So the Executive Committee instructed the Secretary to secure, if necessary, the services of some expert in the organization of material to be distributed to the representatives of the local press.

The Executive Committee received a resolution from the Council of Church Boards of Education commending the regional standardizing agencies for the increased emphasis that is being placed on the qualitative rather than merely quantitative standards.

Under the Constitution, the Executive Committee is given the power to review the decisions of the Commissions in the matter of warning or dropping schools from the lists. In accordance with this authority, the Executive Committee reinstated the Gibsonburg High School of Gibsonburg, Ohio, a school that had been dropped by the Commission on Secondary Schools.

The Executive Committee added to the list of approved junior colleges, Inter-Mountain Union College of Helena, Montana, and Lincoln College of Lincoln, Illinois. These schools had been dropped from the list by the action of the Commission on Higher Institutions. The action of the Executive Committee was therefore an action to reverse the

decision of the Commission on Higher Institutions.

The Executive Committee has adopted a set of policies to be followed in the matter of the selection of persons to be nominated for honorary membership. Under the Constitution, honorary members are to be proposed by the Executive Committee and elected by a two-thirds vote of all members present and voting at any regular meeting. I wish, therefore, to report at this time the procedure that the Executive Committee will follow in making up the list of those to be brought to the Association tomorrow.

First, the Executive Committee intend to be guided by the following policies in adding to the present list of honorary members: Intend to recommend as honorary members all former Presidents, former Secretaries and former Treasurers of the Association who are not already on the honorary membership list.

Second, intend to ask the three Commissions to recommend each year to the Executive Committee one person formerly a member of the Commission but who is no longer active in the work of any of the Commissions.

Third, the Executive Committee intend from time to time to nominate one person from outside the territory of the Association who has rendered some conspicuous service in the field of education in which the North Central Association is much interested.

Furthermore, the Executive Committee has authorized that the list of honorary members shall be published each year in the June issue of the Quarterly. Further, the Executive Committee has authorized the President and Secretary of the Association to issue to all honorary members a certificate of membership.

These are the matters, Mr. Chairman, that do not call for action on the part of the Association.

I wish now to pass to certain actions of the Executive Committee which will either be brought before you today or tomorrow for your consideration.

The Executive Committee instructed

Mr. Brown, Secretary of the Commission on Secondary Schools, to submit to the Association the action of the Commission on Secondary Schools in the matter of the preparation of a list of accredited schools. That matter, Mr. Chairman, has been brought before the Association.

Further, the Executive Committee instructed Dr. Zook, Secretary of the Commission on Higher Institutions, to submit certain nominations for vacancies on that Commission, and that matter will be brought before the Association at the time Dr. Zook presents his report.

Again, the Executive Committee instructed Mr. French, Secretary of the Commission on Unit Courses and Curricula, to submit certain nominations for vacancies on the Commission on Unit Courses and Curricula.

Next, the Executive Committee instructed Mr. Brown, Secretary of the Commission on Secondary Schools, to submit certain nominations for vacancies on that Commission. Action has already been taken on the filling of vacancies of the Commission on Secondary Schools.

I wish at this time to call attention to the fact that the Executive Committee will hold a meeting tonight at eight-thirty to transact certain routine business, to hear any appeals that may be made from decisions of either the Commission on Higher Institutions or the Commission on Secondary Schools. The Executive Committee will also hold a meeting following the adjournment of the Association tomorrow afternoon.

It is also the plan of the Executive Committee to hold a meeting next November. I make these announcements at this time in order to give fair warning of the fact that the Executive Committee tries to hold a sufficient number of meetings to take care of the various duties assigned to it under the Constitution.

PRESIDENT MORGAN: I was just consulting with the Secretary concerning the appeals which he reported last year. I happened to be a member of the Executive Committee. Those appeals were only considered upon the rec-

ommendation of the original committees that handled them on the basis of some new evidence which came in.

There is no action needed on any of the points presented today.

In connection with the report of the Secretary, we shall have the report of the Editor of the publication, the Quarterly. Mr. Davis.

E. REPORT RESPECTING THE QUARTERLY

MR. C. O. DAVIS: Mr. Chairman, with your consent, and for the sake of economy, I shall read the few words that I wish to speak.

Mr. Davis read his report as Editor of the Quarterly.*

PRESIDENT MORGAN: You have heard the report of the Editor. Have you any questions to ask him? I assume, then, that a motion to approve his report and add it to our files is in order.

Upon motion regularly made, seconded and carried, the report of the Editor was accepted . . .

PRESIDENT MORGAN: The Secretary reminds me he is quite willing to answer any questions you have with respect to his report or additional matters. Have you any such questions?

We will next listen to the report of the Treasurer, Mr. McComb.

F. REPORT OF THE TREASURER

TREASURER McCOMB: Mr. Chairman and Members of the Association: Let me express my hearty appreciation for your very prompt and accurate assistance in the work of the Treasurer. We have handled receipts from over 2600 schools and higher institutions, and only by your promptness and accuracy can that work be well taken care of.

This report will be brief, giving the larger items that are taken from the books of the Treasurer. I have those books here for the use of the Auditing Committee, and I have had the accounts audited by a certified public accounting firm, Pace, Gore and McLaren.

Treasurer McComb then read his report.*

TREASURER McCOMB: You will see from this, when we subtract the \$5,000 from the Carnegie Fund, that our balance is about the same as it was last year. The chances are that the expenses of closing up this year's business will run about the same as last year, so it looks as if we would come out at the end of the year when all bills have been paid, with a balance somewhere in the neighborhood of \$8,000, just as we did last year.

That is all I have to say, Mr. Chairman. If there are any questions I shall be glad to try to answer them.

PRESIDENT MORGAN: Has anyone a question to ask Mr. McComb? If not, a motion is in order to receive his report, which will, of course, be acted upon when the Auditing Committee makes its report.

MR. C. R. MAXWELL: I move it be received.

The motion was regularly seconded, was put to a vote and carried . . .

PRESIDENT MORGAN: Since coming to Chicago I reheard a story of a traveling man who, in furnishing his first expense account, itemized "one overcoat," and the man by whom he was employed informed him that overcoats were not an item of expense so far as travel was concerned, and asked him to make a new report on the matter for the next month.

He submitted a second report and was highly commended for it, and special mention was made of the fact that it contained no overcoats. The salesman said, "Yes, it has the overcoat there all right but you don't see it." (Laughter)

I have a great deal more confidence than that in our Treasurer. You will observe by the Treasurer's report that there are no paid officers in this Association. There is no item of salaries there for the officers or even for the state managers. The only money they handle is that of their own expenses when they

*This report was printed in the June Quarterly, 1930.—The Editor.

*This report appeared, in full, in the June issue of the Quarterly.—The Editor.

get their money refunded for the money they have spent.

We shall pass to the last part of the program. I am sure that those of us who heard Secretary Wilbur yesterday were much impressed with the statement that he made concerning the work of research in the Office of Education. I am also sure that any of us who have had any misgivings about the interest of the federal government in educational research and of the interest of the Office of Education in educational research will have all of our misgivings satisfied when we hear the report of Dr. Koos who is Associate Director of the Survey on Secondary Education in this country. I am very glad to have the opportunity to introduce Dr. Koos at this time, and he will make his report. (Applause)

G. MR. KOOS' PAPER

DR. L. V. KOOS: Mr. President and Members of the Association: This statement of mine is to be very matter of fact. It hasn't any thrills in it. In order to keep it within reasonable limits of time, I have set it down on some sheets and I shall read it.

... Dr. Koos read his report on National Survey of Secondary Education.*

PRESIDENT MORGAN: I am sure it is very gratifying to the members of this Association to know that the effort that was made by it in initiating this sort of study or survey has been started, and that a man who has done much work in this Association is vir-

tually in charge of it. We thank you very much, Dr. Koos.

In introducing the last speaker I suggested certain things in question with respect to the federal government and education and assured you that by the time we were through with this discussion it would be relieved in your minds. If perchance anyone is still hesitant about accepting the situation, the report of the next speaker, added to this one, ought to be completely convincing, for while this Association did not initiate the next move, it was very kind in joining in the movement. I am sure you will be interested in hearing a report of the movement towards a survey in teacher training in the United States. The Chairman of the Committee that is representing the American Association of Teachers Colleges is here to report that movement and, in connection with that, give you the information as to the other organizations that are interested.

I am very glad, indeed, to present to you Mr. Dwight B. Waldo, President of the Western State Teachers College of Kalamazoo. (Applause)

H. MR. WALDO'S PAPER

MR. D. B. WALDO: Mr. Chairman, the story I am to give is the story of an attempt to secure cash with which to carry on a second comparatively needed survey, a survey of teacher training in this country.

... Mr. Waldo read the report of the Committee on Nation-wide Study of Teacher Training.*

*This paper appears in full in this issue of the Quarterly.—The Editor.

*This report will be published, in full, in a forthcoming issue of the Quarterly.—The Editor.

Convention Roll Call

The following persons were in attendance at the annual meeting of the Association held in Chicago, March 18-21, 1930:

ARIZONA

- J. W. Clarson, Jr., Dean, College of Education, University of Arizona, Tucson
 Grady Gammage, President, State Teachers College, Flagstaff
 E. W. Montgomery, Superintendent, Union High School and Junior College, Phoenix
 J. F. Walker, Professor, Educ. Psychology, University of Arizona, Tucson
 (4)

ARKANSAS

- Ruth E. Beck, Dean, Central College, Conway
 Elmer Cook, Principal, Senior High School, Fort Smith
 J. J. Doynce, Supt. of Schools, Lonoke
 H. E. Eldridge, Registrar, State A. and M. College, Jonesboro
 W. D. Ferguson, Field Secretary, College of the Ozarks, Clarksville
 J. R. Grant, President, Arkansas Polytechnic College, Russellville
 C. M. Hirst, State Supt. Public Instruction, Little Rock
 Frank Horsfall, President, State A. and M. College, Monticello
 H. G. Hotz, Professor Secondary Education, University of Arkansas, Fayetteville
 W. L. Hurie, President, College of the Ozarks, Clarksville
 C. D. Johnson, President, Ouachita College, Arkadelphia
 V. C. Kays, President, State A. & M. College, Jonesboro
 J. A. Larson, Principal, High School and Junior College, Little Rock
 C. T. Leaf, Head Dept. Education, State A. & M. College, Jonesboro
 H. L. McAlister, Acting President, Arkansas State Teachers College, Conway
 M. R. Owens, High School Supervisor, State Dept. of Education, Little Rock
 L. C. Sears, Dean, Harding College, Morrilton
 (17)

COLORADO

- Richard Aspinall, President, Western State College, Gunnison
 Rev. A. A. Breen, President, Regis College, Denver
 Charles C. Brown (Formerly at University of Colorado, Boulder) Now with Silver, Burdette and Co., Chicago
 E. L. Brown, In charge of High Schools, Denver
 A. C. Cross, High School Visitor, University of Colorado, Boulder

- D. S. Duncan, Dean, College of Liberal Arts, University of Denver
 W. D. Engle, Vice-Chancellor, University of Denver
 P. S. Gillespie, Principal, High School, Greeley
 Ralph J. Gilmore, Professor of Biology, Colorado College, Colorado Springs
 Mother Genovera, Principal, St. Mary's Academy, Denver
 Sister M. Edmond Fern, President, Loretto Heights College, Loretto
 (11)

ILLINOIS

- H. D. Allen, Principal, High School, Bellflower
 Charles Allen, Principal, High School Neoga
 C. W. Allison, Principal, High School, Champaign
 J. G. Ames, Acting President, Illinois College, Jacksonville
 C. C. Anderson, Principal, High School, Argo
 F. R. Anderson, English Faculty, Lane High School, Chicago
 J. C. Anderson, President, Luther Institute, Chicago
 G. A. Andreen, President, Augustana College, Rock Island
 J. E. Armstrong, Secretary, Chicago Principals' Club, Chicago
 F. L. Bacon, Principal, High School, Evanston
 K. C. Babcock, Dean, University of Illinois, Urbana
 E. L. Baker, Dean, McKendree College, Lebanon
 E. W. Balduf, Dean, College of Arts and Sciences, Central Y. M. C. A., Chicago
 Lillian Barbour, Registrar, Ferry Hall, Lake Forest
 W. L. Baughman, Principal, Junior High School, East St. Louis
 R. G. Beals, Supt. of Schools, DeKalb
 F. A. Benson, Supt. of Schools, Orion
 F. L. Biester, Principal, Glenbard Twp. High School, Glen Ellyn
 J. E. Blue, Principal, High School, Rockford
 E. L. Boyer, Principal, Bloom Twp. High School, Chicago Heights
 Albert Britt, President, Knox College, Galesburg
 Brother Albert, Principal, Central Catholic High School, East St. Louis
 Rev. Brother M. S. Curtis, Principal, Leo High School, Chicago
 Brother Lawrence David, Principal, De La Salle Institute, Chicago
 Rev. Brother J. I. Doorley, Head of English Dept., Leo High School, Chicago
 Brother J. Ilzen, Principal, St. George High School, Evanston
 Brother Julius Kreshel, Principal, Spaulding Institute, Peoria
 C. A. Brothers, Principal, High School, Dwight
 R. D. Brummett, Principal, High School, Pana
 H. L. Buck, Principal, Central Y. M. C. A. Evening High School, Chicago
 J. O. Buswell, Jr., President, Wheaton College, Wheaton.

- Mildred Cavins, English Teacher, University School for Girls, Chicago
- C. E. Chadsey, Dean, College of Education, University of Illinois, Urbana
- C. L. Clarke, Professor of Education, Lewis Institute, Chicago
- J. S. Cleland, Dean, Monmouth College, Monmouth
- A. W. Clevenger, High School Visitor, University of Illinois, Urbana
- N. P. Colwell, Secretary, Council on Medical Education of the American Medical Ass'n, Chicago
- C. C. Condit, Principal, High School, Rantoul
- O. M. Corbell, Principal, High School, Centralia
- Rev. W. M. Costello, President, Routt College, Jacksonville
- H. M. Coultrap, Supt. of Schools, Geneva
- Capt. Merrill Dakin, Head English Dept., Morgan Park Military Academy, Chicago
- J. D. Darnall, Supt. of Schools, Geneseo
- D. M. Davidson, Principal, Senn High School, Chicago
- C. R. Davis, Principal, High School, Auburn
- E. L. Davis, Science, Dept., Onarga Military School, Onarga
- Mary E. Davy, Head Mathematics Dept., University School for Girls, Chicago.
- L. O. Dawson, Supt. of Schools, East Moline
- T. M. Deam, Asst. Supt. of High School and Junior College, Joliet
- A. G. Dodd, Asst. Dean, Morgan Park Military Academy, Chicago
- E. C. Dyrness, Registrar, Wheaton College, Wheaton
- Silas Echols, Principal, High School, Mt. Vernon
- J. J. Edwards, Principal, DePaul Academy, Chicago
- S. D. Faris, Supt. of Schools, Carthage
- Elizabeth Faulkner, Principal, Faulkner School for Girls, Chicago
- J. T. Gaffney, Principal, Roosevelt High School, Chicago
- R. E. Garrett, Supt. of Schools, Belvidere
- N. F. Garvey, Supt. of Schools, Lexington
- J. C. Gekas, Grand Island College, Chicago
- H. R. Girhard, Principal, High School, Greenfield
- W. L. Goble, Principal, High School, Elgin
- W. A. Goodier, Principal, High School, Bloomington
- W. J. Goreham, Principal, High School, Sidell
- V. Blanche Graham, Principal, High School, Naperville
- W. F. Hafemann, Principal, High School, Savanna
- W. W. Haggard, Supt. of Schools, Joliet
- C. F. Hamilton, Principal, High School, St. Joseph
- F. R. Hamilton, President, Bradley Institute, Peoria
- J. F. Hammond, Chemistry Teacher, St. Rita High School, Chicago
- H. F. Hancock, Director, Central Y. M. C. A. School, Chicago
- J. C. Hanna, State Supervisor of High Schools, Springfield
- E. C. Hannum, Head English Dept., Francis W. Parker School, Chicago
- E. H. Hausan, Principal, High School, Rock Island
- Cameron Harmon, President, McKendree College, Lebanon
- S. G. Harris, Dean, Eureka College, Eureka
- G. C. Heritage, Acting President, Crane Junior College, Chicago
- C. S. Hobson, Principal, High School, Genoa
- R. T. Huddy, Mathematics Dept., DePaul Academy, Chicago
- Mildred H. Humphrey, Head Dept., Physics and Chemistry, University School for Girls, Chicago
- H. E. Jones, Asst. Supt. Morgan Park Military Academy, Chicago
- Elizabeth S. Kanies, Supervisor Mathematics, Chicago Public Schools
- R. M. Kelley, President, Loyola University, Chicago
- R. J. Kenny, Principal, Loyola Academy, Chicago
- Luella Kiefhofer, College Prep. School, Chicago
- E. S. Lake, Secy. of Faculty, Lincoln College, Lincoln
- Timothy Lehman, President, Elmhurst College, Elmhurst
- W. J. Leinweber, Principal, High School, Mooseheart
- L. F. W. Lesemann, President, Chicago Training School, Chicago
- G. L. Letts, Principal, York Community High School, Elmhurst
- T. S. Ligman, Principal, Weber High School, Chicago
- O. E. Loomis, Principal, High School, Rockton
- Clara H. Lorenzen, Asst. Principal, Ferry Hall, Lake Forest
- C. P. McClelland, President, Illinois Woman's College, Jacksonville
- T. J. McCormack, Supt., La Salle-Peru Twp. High School and Junior College, La Salle
- M. R. McDaniel, Supt. of Schools, Oak Park
- W. E. McVey, Supt. Thornton Twp. High School, Harvey
- C. E. Miller, Supt. of Schools, Kansas
- E. C. Miller, Asst. Recorder, University of Chicago
- O. V. Mongerson, Supt. of Schools, Chenoa
- W. P. Morgan, President, Western Illinois State Teachers College, Macomb
- F. L. Morse, Principal, Harrison Technical High School, Chicago
- K. W. Moser, Dean of Boys, High School, Dowers Grove
- Miss Y. Napolilli, Mathematics Dept., Holy Family Academy, Chicago
- A. M. Nicholson, Principal, Hirsch Junior High School, Chicago
- A. C. Norton, B. H. Sanborn Company, Decatur
- E. P. Nutting, Principal, High School, Moline
- O. F. Patterson, Principal, High School, Oakland
- W. A. Payne, Recorder and Examiner, University of Chicago, Chicago
- C. E. Pence, Principal, Harvard School for Boys, Chicago
- M. E. Penney, President, Millikin University, Decatur
- C. H. Perrine, Principal, Lake View High School, Chicago
- C. E. Peet, Professor of Zoology, Lewis Institute, Chicago
- C. S. Pier, Asst. to President, Lake Forest College, Lake Forest
- D. A. Podoll, Principal, Western Illinois State Teachers College High School, Macomb
- G. M. Potter, President, Shurtleff College, Alton
- E. W. Powers, Principal, High School, Watseka
- J. K. Price, Principal, High School, Mahomet

- Abbie Probasco, Principal, Jennings Seminary, Aurora
- W. E. Quick, Principal, High School, Macomb
- J. F. Quinn, Principal, St. Ignatius High School, Chicago
- E. E. Rall, President, North Central College, Naperville
- A. A. Rea, Principal, West High School, Aurora
- Joseph Reiner, Dean, Loyola University, Chicago
- O. F. Revercomb, Supt. of Schools, Huntley
- C. W. Rice, Principal, High School, Urbana
- J. W. Richards, Headmaster, Lake Forest Academy, Lake Forest
- W. C. Robb, Principal, High School, Maywood
- M. F. Roberts, Principal, High School, Wheaton
- R. M. Robertson, Principal, High School, Rock Falls
- R. M. Robinson, Principal, High School, Kewanee
- F. J. Rooney, Professor of Law, Loyola, University, Chicago
- D. A. Rothschild, Asst. Principal, High School, Normal
- S. P. Rudens, Educational Director, J. P. Institute High School, Chicago
- R. C. Sayre, Principal, High School, Decatur
- E. R. Schell, Dean, Wheaton Academy, Wheaton
- R. A. Scheer, Principal, High School, Sullivan
- E. Schobinger, Principal, Harvard Schools for Boys, Chicago
- Alice Seeds, Central Scientific Company, Chicago
- W. P. Shadoan, Supt. Illinois Military School, Abingdon
- H. W. Shryock, President, Southern Illinois State Normal University, Carbondale
- R. J. Sisson, Principal, High School, Wauconda
- Sister Marie, Principal, Villa de Chantal, Rock Island
- Sister Mary Adrian, Biology Teacher, Mercy High School, Chicago
- Sister M. Alberto, Principal, Visitation High School, Chicago
- Sister M. Angeline, Aquinas High School, Chicago
- Sister M. Angelita, Librarian, St. Mary's High School, Chicago
- Sister Mary Arnabilis, Teacher, Holy Family Academy, Chicago
- Sister Arnoldina, Principal, Maria Immaculata Academy, Wilmette
- Sister M. Augustus, Teacher, Immaculata High School, Chicago
- Sister M. Basil, Teacher, Aquinas High School, Chicago
- Sister M. Bernardo, Principal, St. Michael High School, Chicago
- Sister M. Bertha, Zoology Teacher, Mercy High School, Chicago
- Sister M. Bethel, Teacher, Immaculata High School, Chicago
- Sister M. Camillus, Principal, Trinity High School, River Forest
- Sister M. Cecillia, Principal, St. Scholastica High School, Chicago
- Sister M. Charlotte, Biology Teacher, St. Xavier Academy, Chicago
- Sister M. Clementia Moroney, Instructor, Mercy High School, Chicago
- Sister M. Concepta Horan, Principal, Mercy High School, Chicago
- Sister Mary Consilia, English Instructor, St. Xavier Academy, Chicago
- Sister M. Delphine, Teacher, Visitation High School, Chicago
- Mother M. Dolores, Teacher, Villa de Chantal, Rock Island
- Sister M. Dolores, Supervisor, St. Scholastica Academy, Chicago
- Sister M. Evangela, Mundelein College, Chicago
- Sister M. Evelyn, Dean, Rosary College, River Forest
- Sister M. Fidelis, Registrar, Rosary College, River Forest
- Sister M. Francis, Chemistry Teacher, Holy Family Academy, Chicago
- Sister M. Hildegard, Aquinas High School, Chicago
- Sister M. James, Principal, Academy of Our Lady, Chicago
- Sister Michael James, History Teacher, Aquinas High School, Chicago
- Sister M. Januarius, Principal, Trinity High School, Bloomington
- Sister Mary Justitia, Mundelein College, Chicago
- Sister M. Kieran, Aquinas High School, Chicago
- Sister Mary de Lellis, Principal, Aquinas High School, Chicago
- Sister M. Leonore, Teacher, Mercy High School, Chicago
- Sister M. Lignori, Principal, Holy Family Academy, Chicago
- Mother Mary Loyola, Principal, Academy of Notre Dame, Belleville
- Sister Mary Luke, Principal, St. Xavier Academy, Chicago
- Sister M. Mack, Chemistry Teacher, St. Xavier Academy, Chicago
- Sister M. Medarda, History Teacher, Holy Family Academy, Chicago
- Sister M. Patricia, Chemistry Teacher, Mercy High School, Chicago
- Sister M. Patrick, Home Economics Teacher, St. Xavier Academy, Chicago
- Sister M. Rafael, Mundelein College, Chicago
- Sister Raphaelis, Principal, Mallinckrodt High School, Wilmette
- Sister Regina Marie, Science Teacher, Aquinas High School, Chicago
- Sister M. Rosalyn, Librarian, Trinity High School, River Forest
- Sister Rose Gerald, Teacher, Aquinas High School, Chicago
- Sister M. Ruth, President, Rosary College, River Forest
- Sister M. St. Genevieve, Teacher, Mundelein College, Chicago
- Sister M. Tertulla, Principal, St. Mary's High School, Chicago
- Sister M. Theophane, Teacher, Holy Family Academy, Chicago
- G. N. Sleight, Head Dept. Education, Lake Forest College, Lake Forest
- M. E. Steele, Principal, High School, Mendota
- T. W. Steen, President, Broadview College, La Grange
- E. H. Taylor, Head Dept. Mathematics, Eastern Illinois State Teachers College, Charleston

J. W. Thalman, Supt. of Schools, Waukegan
 Talbott Thomas, English Instructor, DePaul University, Chicago
 Edna Thoreen, French Instructor, Frances Shimer School, Mt. Carroll
 W. E. Tower, Dist. Supt. of Senior High Schools, Chicago
 Eloise R. Tremain, Principal, Ferry Hall, Lake Forest
 H. D. Trimble, Asst. High School Visitor, University of Illinois, Urbana
 L. T. Turpin, Principal, High School, Alton
 Grace C. Tyler, Principal, High School, Riverside
 J. E. Wakeley, Principal, High School, Danville
 A. S. Wallgren, Dean, North Park College, Chicago
 William Wallis, Dean, College Liberal Arts, Illinois Wesleyan University, Bloomington
 J. C. Wiedrich, Supt. of Schools, DePue
 G. W. Willett, Principal, Lyons Twp. High School, LaGrange
 L. W. Williams, Principal, University High School, Urbana
 U. G. Willis, Principal, Pullman Free School, Chicago
 F. A. Wilson, Principal, High School, West Frankfort
 O. N. Wing, Principal, Central Y. M. C. A. Day High School, Chicago
 O. Winter, Principal, Parker High School, Chicago
 R. O. Witcraft, Principal, Parker Junior High School, Chicago
 Robert Woellner, Professor, University of Chicago
 W. H. Wright, Principal, Austin High School, Chicago
 O. O. Young, Supt. of Schools, Galesburg
 (215)

INDIANA

O. R. Bangs, Principal, High School, Bluffton
 W. M. Blanchard, Dean, DePauw University, Greencastle
 W. W. Borden, Supt. of Schools, South Bend
 George Buck, Principal, Shortridge High School, Indianapolis
 F. L. Busenburg, Supt. of Schools, Crown Point
 C. C. Cauble, Principal, High School, Mishawaka
 C. S. Coons, Principal, Froebel High School, Gary
 F. R. Cox, Principal, High School, Attica
 M. C. Darnall, Principal, High School, Crawfordsville
 W. C. Dennis, President, Earlham College, Richmond
 E. C. Elliott, President, Purdue University, Lafayette
 R. W. Feik, Principal, Washington High School, East Chicago
 W. S. Forney, Principal, Wiley High School, Terre Haute
 Carl G. F. Franzen, Professor Secondary Education, Indiana University, Bloomington
 E. F. Fribble, Principal, High School, Auburn
 A. O. Fulkerson, Principal, High School, Washington
 W. G. Gingery, Principal, George Washington High School, Indianapolis
 L. C. Grubb, Principal, High School, Whiting
 A. E. Highley, Supt. of Schools, Lafayette

C. C. Hillis, Principal, High School, Elwood
 J. W. Holdeman, Principal, High School, Elkhart
 C. W. Holl, Dean, Manchester College, North Manchester
 F. L. Hunt, Headmaster, Culver Military Academy, Culver
 J. S. Hussey, Asst. Director Elem. and High School Inspection, State of Indiana, Indianapolis
 E. S. Jamieson, Headmaster, Howe School, Howe
 J. W. Jones, Director, Division of Research, Indiana State Teachers College, Terre Haute
 R. B. Julian, Principal, High School, Bedford
 W. J. Krick, Principal, High School, Decatur
 F. W. Kroencke, Dean, Valparaiso University, Valparaiso
 L. F. Kuntz, Head Dept. of Education, University of Notre Dame, South Bend
 C. E. Leavenworth, Professor of Romance Languages, Wabash College, Crawfordsville
 L. A. Lockwood, Principal, High School, Rushville
 C. D. Lutz, Principal, Horace Mann School, Gary
 E. H. Kemper McComb, Principal, Manual Training High School, Indianapolis
 L. E. Michael, Principal, High School, Plymouth
 Florence J. Morgan, Principal, Tudor Hall School, Indianapolis
 Matthias Nolcox, Principal, High School, Indianapolis
 O. C. Osborn, Asst. Principal, High School, South Bend
 Noah Oyer, Dean, Goshen College, Goshen
 L. A. Pittenger, President, Ball State Teachers College, Muncie
 J. W. Putnam, Dean and Vice-President, Butler University, Indianapolis
 H. P. Rainey, President, Franklin College, Franklin
 L. E. Singer, Principal, Jefferson High School, Lafayette
 Sister Eugenia, Dean, St. Mary-of-the-Woods College, St. Mary-of-the-Woods
 Sister Francis Joseph, Supervisor of Schools of Sisters of Providence, St. Mary-of-the-Woods College
 Sister M. Geraldine, Instructor, St. Mary-of-the-Woods Academy
 Sister Louis Irene, Instructor, St. Mary's Academy, Notre Dame
 Sister Mary Verda, Chairman, Philosophy Group, St. Mary's College, Notre Dame
 H. L. Smith, Dean, School of Education, Indiana University, Bloomington
 E. A. Spaulding, Principal, Emerson School, Gary
 A. L. Spohn, Principal, High School, Hammond
 Guy Stantz, Principal, Gerstmeier Technical High School, Terre Haute
 Virgil Stinebaugh, State School Inspector, State Dept. of Education, Indianapolis
 M. H. Stuart, Principal, Arsenal Technical High School, Indianapolis
 V. L. Tatlock, Principal, High School, Bloomington
 J. L. Thalman, Principal, High School, Anderson
 C. E. Torbet, Dean, Evansville College, Evansville
 W. E. Wagoner, Secretary-Registrar, Ball State Teachers College, Muncie
 J. J. Weber, Dept. of Education, Valparaiso University, Valparaiso

- S. R. Wells, Principal, Roosevelt High School, East Chicago
 John White, Professor of Chemistry, Rose Polytechnic Institute, Terre Haute
 A. H. Woodworth, Dean, Hanover College, Hanover
 S. C. Yoder, President, Goshen College, Goshen
 Rev. C. H. Young, Rector, Howe School, Howe (64)

IOWA

- G. N. Briggs, President, Graceland College, Lamoni
 H. J. Burgstahler, President, Cornell College, Mt. Vernon
 I. W. Cook, Business Manager, Penn College, Oskaloosa
 C. W. Emmons, Registrar, Simpson College, Indianola
 Rev. E. A. Fitzgerald, Director of Studies, Columbia College, Dubuque
 J. E. Foster, Dean of Summer Quarter, Iowa State College, Ames
 H. M. Gage, President, Coe College, Cedar Rapids
 W. H. Gemmill, Secretary, Iowa State Board of Education, Des Moines
 C. W. Greene, President, Parsons College, Fairfield
 Rev. U. A. Hauber, President, St. Ambrose College, Davenport
 Agnes E. Heightshoe, Supt. of Schools, Perry
 R. W. Johnson, Principal, High School, Dubuque
 T. W. Kerfoot, Principal, High School, Fort Madison
 O. R. Latham, President, State Teachers College, Cedar Falls
 H. L. McCracken, President, Penn College, Oskaloosa
 B. R. Miller, Principal, High School, Marshalltown
 D. W. Morehouse, President, Drake University, Des Moines
 M. G. Morrin, Registrar, St. Ambrose College, Davenport
 L. B. Mull, Dean, College of Liberal Arts, University of Dubuque, Dubuque
 J. S. Nollen, Dean, Cornell College, Grinnell
 O. L. Olson, President, Luther College, Decorah
 P. C. Packer, Dean, College of Education, University of Iowa, Iowa City
 O. L. Proehl, President, Wartburg College, Clinton
 James Rae, Principal, High School and Junior College, Mason City
 J. R. Sage, Registrar, Iowa State College, Ames
 F. W. Schneider, Vice-President Morningside College, Sioux City
 Sister M. Augustina, Dean, Aquinas Junior College, Davenport
 Sister M. Baptist, Supervisor, Lab. School, St. Joseph Junior College, Ottumwa
 Sister M. Basiline, Acting President, Clarke College, Dubuque
 Sister Mary Carlos, Principal, Immaculate Conception Academy, Dubuque
 Sister Mary Eunice, Instructor, Mount St. Francis High School, Dubuque
 Mother M. Geraldine, President, St. Joseph Junior College, Ottumwa
 Sister Mary Geraldine, McQuillan, Instructor, Visitation Academy, Dubuque

- Sister M. Josephine, Principal, Visitation Academy, Dubuque
 Sister Mary Regina, Principal, Immaculate Conception Academy, Davenport
 Sister Mary Resignata, Instructor of Math., Clarke College, Dubuque
 Sister Mary Richard, Instructor of English, Clarke College, Dubuque
 Sister Mary St. Helen, Registrar, Clarke College, Dubuque
 F. G. Stevenson, Supt. of Schools, Dubuque
 J. S. Vanderlinden, Principal, High School, Ames
 S. N. Williams, Emeritus Professor Civil Engineering, Cornell College, Mt. Vernon
 L. J. M. Wolfe, Supt. of Diocesan Schools, Columbia College, Dubuque
 W. B. Zuker, Vice-President, University of Dubuque, Dubuque (43)

KANSAS

- W. A. Brandenburg, President, State Teachers College, Pittsburg
 L. W. Brooks, Director of Secondary Education, Wichita
 E. Q. Brothers, Dean of Junior College, Arkansas City
 W. M. Brown, Jr., Head English Dept., St. John's School, Salina
 L. M. Collins, Dean of Men, State Teachers College, Pittsburg
 L. L. Cusack, Principal, St. Mary's College High School, St. Mary's
 H. K. Ebright, Dean, Baker University, Baldwin
 J. E. Edgerton, High School Supervisor, State Board of Education, Topeka
 E. T. Franklin, President, Southwestern College, Winfield
 John Danihi, Dean, St. Mary's College, St. Mary's
 M. M. Gilkeson, Principal, High School, Augusta
 E. K. Hillbrand, Dean, Graduate School, University of Wichita, Wichita
 J. B. Kelly, President, College of Emporia, Emporia
 J. W. Kiewer, President, Bethel College, Newton
 F. B. Lee, Dean of Faculty, State Teachers College, Hays
 Miss Louie Lesslie, Secy. State Board of Education, Topeka
 W. O. Mendenhall, President, Friends University, Wichita
 C. M. O'Hara, Asst. Dean, St. Mary's College, St. Mary's
 S. B. Schmitz, Dean, College Liberal Arts, St. Benedict's College, Atchison
 Bonaventure Schwinn, Director Summer Session, St. Benedict's College, Atchison
 J. A. G. Shirk, Head Dept. of Mathematics, State Teachers College, Pittsburg
 Sister Mary Berchman, St. Mary's College, Leavenworth
 Sister Rose Mary, Immaculate Academy, Leavenworth
 Erdmann Smith, President, Ottawa University, Ottawa
 E. B. Stouffer, Dean, Graduate School, University of Kansas, Lawrence

- B. W. Truesdell, Vice-Principal, East High School, Wichita
 J. F. Wellemeyer, Principal, Wyandotte High School, Kansas City
 J. F. Willard, Vice-President, State Agricultural College, Manhattan
 O. R. Young, Principal, High School, Leavenworth (29)

MICHIGAN

- F. G. Averill, Principal, Fordson High School, Dearborn
 G. C. Baker, Registrar, Ferris Institute, Big Rapids
 C. C. Barnes, Registrar, Central State Teachers College, Mt. Pleasant
 H. S. Bates, Principal, High School, Petoskey
 L. C. Bow, Principal, Redford High School, Detroit
 W. E. Bow, Dean, Detroit Teachers College, Detroit
 C. R. Bradshaw, Principal, Lincoln High School, Ferndale
 I. M. Brock, Principal, Arthur Hill High School, Saginaw
 J. Broene, President, Calvin College, Grand Rapids
 G. L. Brown, Head Dept. of Psych. and Educ., Northern State Teachers College, Marquette
 G. T. Cantrick, Principal, High School, Monroe
 L. V. Carron, Principal, University of Detroit High School, Detroit
 G. E. Carrothers, Director of High School Inspection, University of Michigan, Ann Arbor
 I. E. Chapman, Principal, Western High School, Detroit
 C. I. Clark, Supt. of Schools, Stambaugh
 W. R. Cleminson, Principal, High School, East Lansing
 W. L. Coffey, Dean, College of City of Detroit, Detroit
 W. H. Congdon, High School Inspector, University of Michigan, Ann Arbor
 E. M. Conklin, Principal, High School, Hamtramck
 J. H. Corns, Principal, Central High School, Detroit
 J. A. Craig, Supt. of Schools, Muskegon
 C. O. Davis, Professor Secondary Education, University of Michigan, Ann Arbor
 C. A. DeJonge, Supt. of Schools, Zeeland
 G. H. Derry, President, Marygrove College, Detroit
 B. J. Dobben, Principal, High School, Greenville
 F. J. DuFrain, Principal, High School, Pontiac
 J. B. Edmonson, Dean, School of Education, University of Michigan, Ann Arbor
 H. E. Edwards, Head Dept. of Education, Emmanuel Missionary College, Berrien Springs
 J. R. Effinger, Dean, University of Michigan, Ann Arbor
 A. E. Erickson, Principal, High School, Ironwood
 O. A. Emmons, Principal, Cooley High School, Detroit
 J. P. Everett, Chairman, Dept. of Mathematics, Western State Teachers College, Kalamazoo
 C. L. Goodrich, Deputy Supt. of Public Instruction, Lansing
 G. A. Graham, Principal, High School, Lake Linden
 M. C. Hart, Principal, Hart School, Birmingham
 W. C. Harton, Principal, High School, Albion
 Teresa Hennessy, Teacher, Froebel School, Marquette
 D. R. Henry, Director, Junior College, Muskegon
 C. L. Herron, Dean, Hillsdale College, Hillsdale
 O. C. Hood, Principal, High School, Dearborn
 E. G. Johnston, Principal, University High School, Ann Arbor
 J. H. Killmaster, Principal, High School, Allegan
 W. M. Land, Principal, High School, Ypsilanti
 C. E. LeFurge, Principal, Central High School, Lansing
 S. H. Lyttle, Principal, Saginaw High School, Saginaw
 G. A. Manning, Principal, High School, Muskegon
 E. L. Miller, Asst. Supt. of Schools, Detroit
 C. L. Milton, Principal, St. Joseph High School, St. Joseph
 J. M. Munson, President, Northern State Teachers College, Marquette
 G. W. Murdock, Principal, Southwestern High School, Detroit
 O. F. Norwalk, Principal, Northern High School, Flint
 L. A. Packard, Supt. of Schools, Port Huron
 B. H. Phipps, Principal, Emmanuel Missionary High School, Berrien Springs
 M. S. Pittman, Director of Training, Michigan State Teachers College, Ypsilanti
 L. C. Plant, Professor of Mathematics, Michigan State College, East Lansing
 Wm. Prakken, Principal, High School, Highland Park
 C. W. Price, Inspector High Schools, Dept. Public Instruction, Lansing
 T. Luther Purdom, Director Bureau of Appointments and Occupational Information, University of Michigan, Ann Arbor
 H. H. Riggs, Supt. of Schools, Otsego
 B. J. Rivett, Principal, Northweter High School, Detroit
 A. J. Rooks, Dean, Calvin College, Grand Rapids
 E. G. Rose, Principal, High School, Marshall
 E. W. Root, Principal, Western State Teachers College Training School, Paw Paw
 Flora Schieferstein, Clerk to Secretary of North Central Ass'n, Ann Arbor
 Raleigh Schorling, Professor of Education, University of Michigan, Ann Arbor
 J. L. Seaton, President, Albion College, Albion
 C. A. Semler, Principal, High School, Benton Harbor
 Hermon Severn, Dean, Kalamazoo College, Kalamazoo
 Sister M. Alphonsus O'Rourke, Principal, St. Marys School, Saginaw
 Mother M. Benedicta O'Rourke, Directress, Marywood Academy, Grand Rapids
 Sister M. Bertrand, Principal, Girls' Catholic Central High School, Grand Rapids
 Sister Marie Celeste, Instructor, Marygrove College, Detroit
 Sister M. Genevieve, Principal, Boy's Catholic Central High School, Grand Rapids
 Sister M. Henrietta Teacher, Marywood Academy, Grand Rapids

Sister Mary Hubert, Instructor, St. Mary's College, Monroe
 Sister M. Immaculata, Dean, St. Marys College and Academy, Monroe
 Sister Mary Jerome, Instructor, Marygrove College, Detroit
 Sister M. Leocadia, Teacher, Mt. Mercy Academy, Grand Rapids
 Sister Mary Richard, Principal, Sacred Heart Academy, Mt. Pleasant
 Sister M. Roch Magnan, French Teacher, Mt. Mercy Academy, Grand Rapids
 Sister M. Scholastica, St. Bernard School, Detroit
 Sister M. Stella, Directress, Nazareth Academy, Nazareth
 Ira M. Smith, Registrar, University of Michigan, Ann Arbor
 J. W. Smith, Principal, Lakeview High School, Battle Creek
 E. J. Soop, Registrar, Detroit Institute of Technology, Detroit
 J. E. Tanis, Principal, Northern High School, Detroit
 H. A. Tape, Principal, Lincoln Training School, Ypsilanti
 A. E. Trippensee, Vice-principal, High School, Grosse Pointe
 B. H. VandenBelt, High School Supervisor, Department of Public Instruction, Lansing
 A. E. Vestling, President, Olivet College, Olivet
 E. C. Warriner, President, Central State Teachers College, Mt. Pleasant
 T. E. Welmers, Registrar, Hope College, Holland
 C. E. Wilcox, Supervisor Junior High Schools, Kalamazoo
 G. F. Wolfkill, President, Emmanuel Missionary College, Berrien Springs
 H. L. Ylvisaker, Principal, High School, Wakefield.
 A. C. Young, Supt. of Schools, Jonesville
 W. J. Zabel, Principal, High School, Niles
 (97)

MINNESOTA

C. W. Boardman, Principal, University High School, Minneapolis
 Brother Richard, Principal, DeLaSalle High School, Minneapolis
 J. N. Brown, President, Concordia, College, Moorhead
 T. O. Burgess, Head Dept. Psychology and Education, Concordia College, Moorhead
 R. D. Chadwick, Dean, Junior College, Duluth
 H. A. Drencher, Dean, Junior College, Hibbing
 C. A. Dunniway, Professor of History, Carleton College, Northfield
 Rev. J. W. Haun, Dean, St. Mary's College, Winona
 J. G. Hegstad, Principal, Junior High School, Hibbing
 D. B. Heller, Supt. of Schools, Eveleth
 Earl Hudelson, Professor of Education, University of Minnesota, Minneapolis
 O. J. Johnson, President, Gustavus Adolphus College, St. Peter
 R. U. Jones, Dean, Macalester College, St. Paul
 L. N. McWhorter, Asst. Supt. of Schools, Minneapolis

Roy Martin, Principal, High School, Hibbing
 Mrs. Roy Martin, Hibbing
 E. M. Phillips, State Director of High Schools, Dept. of Education, St. Paul
 R. R. Shumway, Chairman, Committee on Outside Schools, University of Minnesota, Minneapolis
 Sister Adelgundis, Dean, College of St. Benedict, St. Joseph
 Sister M. Alonzo, Principal, St. Augustine High School, Austin
 Sister M. Aloysius, Principal, Derham Hall High School, St. Paul
 Sister Antonia, President, The College of St. Catherine, St. Paul
 Sister M. Brigid, Principal, Catholic Central High School, Caledonia
 Sister Rose Catherine, Teacher, St. Joseph's Academy, St. Paul
 Sister Eva, Principal, St. Joseph's Academy, St. Paul
 Sister M. Evarista, Instructor, College of St. Teresa, Winona
 Sister Grace, Head Dept. of History, College of St. Benedict, St. Joseph
 Sister Marie James, Teacher, College of St. Catherine, St. Paul
 Sister M. Jane Frances, Principal, Sacred Heart High School, Waseco
 Sister Mary Jeanne, Teacher High School, Caledonia
 Mother M. Leo Tracy, President, Board of Trustees, College of Saint Teresa, Winona
 Sister Mary A. Molloy, President, College of Saint Teresa, Winona
 Sister M. Richard Gorman, Principal, St. John High School, Rochester
 Sister Richarda Peters, Principal, Cathedral High School, St. Cloud
 Sister Virgil Schleck, Secretary, St. Benedict's Academy, St. Joseph
 J. E. Walker Principal, High School, South St. Paul
 R. J. Williams, Principal, High School, Winona
 Leonard Young, Supt. of Schools, Duluth
 (38)

MISSOURI

E. R. Adams, Supt. of Schools, Tarkio
 F. H. Barbee, Supt. of Schools, St. Joseph
 J. A. Bays, Dean of Instruction, Harris Teachers College, St. Louis
 H. E. Blaine, Principal, High School, Joplin
 Ethel K. Boyce, Dean, William Woods College, Fulton
 C. W. Bradlee, Headmaster, Country Day School, Kansas City
 W. J. S. Bryan, Asst. Supt. of Schools, St. Louis
 Mrs. W. J. S. Bryan, St. Louis
 E. R. Cockrell, President, William Woods College, Fulton
 W. F. Cramer, Science Dept., Paseo High School, Kansas City
 E. H. Criswell, Dean, Wentworth Military Academy, Lexington
 J. C. Deaton, Principal, High School, Jefferson City

R. S. Douglass, Dean, State Teachers College, Cape Girardeau
 O. F. Dubach, Principal, Central High School, Kansas City
 J. D. Elliff, High School Visitor, University of Missouri, Columbia
 Roy Ellis, President, Southwest Missouri State Teachers College, Springfield
 Miss L. R. Ernst, Asst. Supt. of Instruction, Public Schools, St. Louis
 L. A. Eubank, Dean, Teachers College, Kirksville
 Eugene Fair, President, Northeast Missouri State Teachers College, Kirksville
 Rev. W. F. Glatka, President, Chaminade College Academy, Clayton
 G. S. Goodwin, Director, Pembroke School, Kansas City
 Julia B. Griswold, Principal, High School, Wellston
 L. M. Haines, Dean, Junior College, St. Joseph
 F. W. Hawley, President, Park College, Parkville
 A. M. Hitch, Supt., Kemper Military School, Boonville
 E. G. Hoffsten, Vice President, Harris Teachers College, St. Louis
 L. S. Hopkins, Dean, Culver-Stockton College, Canton
 S. H. Horine, St. Louis University, St. Louis
 C. E. Huebert, Principal, McBride High School, St. Louis
 C. O. James, Dean, Washington University, St. Louis
 T. M. Knapp, Dean, College of Arts and Sciences, St. Louis University, St. Louis
 Uel W. Lamkin, President State Teachers College, Maryville
 Edgar D. Lee, President, Christian College, Columbia
 G. H. Mack, President, Missouri Valley College, Marshall
 Capt. Frederick Marston, Dean, Kemper Military School, Boonville
 Mrs. Frederick Marston, Boonville
 J. C. Miller, Dean of Faculty, Christian College, Columbia
 A. J. Moon, Registrar, William Jewell College, Liberty
 Rev. W. F. Parry, Principal, St. Louis University High School, St. Louis
 Eugene A. Paulin, Inspector of Schools, Maryhurst Normal, Kirkwood
 J. R. Powell, Dist. Supt. of High Schools, St. Louis
 E. P. Puckett, Dean, Central College, Fayette
 J. L. Purdom, President, Harris Teachers College, St. Louis
 J. L. Roemer, President, Lindenwood College, St. Charles
 L. L. St. Clair, Dean of Faculty, Hardin College, Mexico
 O. G. Sanford, Assistant State Supt. of Schools, Jefferson City
 A. M. Schwitalla, Dean, School of Medicine, St. Louis University, St. Louis
 J. A. Serena, President, Southeast Missouri State Teachers College, Cape Girardeau
 J. L. Shouse, Asst. Supt. of Schools, Kansas City

Sister M. Borgia, Dean, Webster College, Webster Groves
 Mother M. de Chantal, Superior, Loretto Academy, St. Louis
 Sister Discolia, Principal, Redemptonst School, Kansas City
 Sister Helen Marie, Asst. Principal, Rosati-Kain School, St. Louis
 Sister Mary Henry Siegel, Principal, St. Joseph's Academy, St. Louis
 Sister Joseph Aloysius Geissert, Dean, Fontbonne College, St. Louis
 Mother Mary Linus, President, Webster College, Webster Groves
 Mother M. Loretto, Asst. Principal, Rosati-Kain High School, St. Louis
 Sister Mary Loyola, Teacher, St. Elizabeth Academy, St. Louis
 Sister Marietta Jennings, President, St. Teresa College, Kansas City
 Sister Menodova, Teacher, Nevina Hall, Webster Groves
 Sister M. Philomena, Instructor, Loretto Academy, Kansas City
 Sister Mary Prudentia, Supervisor of Schools, St. Mary's Junior College, O'Fallon
 Sister Mary Tolentine, Registrar, Sancta Maria in Ripa, St. Louis
 A. M. Swanson, Vice-President, Junior College, Kansas City
 G. B. Sweazey, Dean, Westminster College, Fulton
 J. A. Thompson, President, Tarkio College, Tarkio
 O. P. Trentham, Principal, Training School, Teachers College, Springfield
 F. E. Vandersloot, Principal, Benton High School, St. Joseph
 Marguess Wallace, Principal, Missouri Military Academy, Mexico
 R. K. Watkins, Professor of Education, University of Missouri, Columbia
 Helen B. Williams, Principal, Barstow School, Kansas City
 N. B. Young, President, Lincoln University, Jefferson City
 (72)

MONTANA

W. S. Brooks, President, Intermountain College, Helena
 Freeman Daughters, Professor of Education, University of Montana, Missoula
 N. C. Hoff, President, Mount St. Charles College, Helena
 (3)

NEBRASKA

A. B. Bowen, Principal, Brownell Hall, Omaha
 R. I. Elliott, President, State Teachers College, Chadron
 J. C. Flynn, Dean, College Liberal Arts, Creighton University, Omaha
 W. P. Hieronymus, President, Hebron Academy, Hebron
 H. C. Mardis, Principal, High School, Lincoln
 G. E. Martin, President, State Teachers College, Kearney
 W. A. Morton, Director, Teacher Training, University of Nebraska, Lincoln

- Father J. H. Ostlick, Supt., St. Mary's High School, Omaha
 W. R. Pate, President, State Teachers College, Peru
 G. W. Rosenlof, State Director of Secondary Education, Lincoln
 A. A. Reed, University Examiner, University of Nebraska, Lincoln
 Sister M. Florentine, Instructor, Sacred Heart High School, Omaha
 Sister M. Magdalen, Instructor, Sacred Heart High School, Omaha
 H. L. Sullivan, Principal, Creighton Prep. School, Omaha
 P. L. Thompson, President, Union College, Lincoln (15)

NEW MEXICO

- P. M. Baldwin, Dean, School of General Science, New Mexico, A. & M. College, State College
 A. O. Bowden, President, New Mexico State Teachers College, Silver City
 J. W. Diefendorf, High School Visitor, University of New Mexico, Albuquerque
 E. E. Lusk, Principal, New Mexico Military Institute, Roswell
 J. D. Shinkle, Principal, High School, Roswell
 Gertrude Zink, Teacher, High School, Roswell
 Mrs. G. W. Zink, Roswell (7)

NORTH DAKOTA

- B. H. Kroeze, President, Jamestown College, Jamestown
 C. C. Schmidt, Professor of Education, University of North Dakota, Grand Forks
 John Page, Director Secondary Education, State Dept. of Public Instruction, Bismarck
 Sister Mary Bertrand, Teacher, St. Johns Academy, Jamestown
 Sister Mary Carola, Teacher, St. John's Academy, Jamestown (5)

OHIO

- Earl W. Anderson, Professor of Education, Ohio State University, Columbus
 C. L. Anspach, Dean, Ashland College, Ashland
 E. J. Ashbaugh, Dean, School of Education, Miami University, Oxford
 Jesse Beer, Principal High School, Mansfield
 E. W. Chubb, Dean, College of Liberal Arts, Ohio University, Athens
 Myrtes E. Clark, Professor of Home Economics, Western College for Women, Oxford
 C. N. Cole, Dean, College of Arts and Sciences, Oberlin College, Oberlin
 J. L. Colford, Principal, St. Ignatius High School, Cleveland
 M. C. Dietrich, Principal, Shaw High School, East Cleveland
 H. J. Doermann, President, University of City of Toledo, Toledo
 H. M. Douth, University of Akron, Akron
 H. R. Dunathan, President, Findlay College, Findlay
 C. D. Everett, Principal, North High School, Columbus
 J. W. Flood, Principal, West High School, Akron
 A. C. Fox, Dean, John Carroll University, Cleveland

- T. W. Gosling, Supt. of Schools, Akron
 O. C. Hatton, Principal, East High School, Akron
 F. L. Huyck, Principal, High School, Wauseon
 H. R. Hundley, Professor of English, Denison University, Granville
 C. W. Hunt, Dean, School of Education, Western Reserve University, Cleveland
 Katherine I. Hunt, Dean of Girls, Dayton Cooperative School, Dayton
 O. L. Inman, Dean, Antioch College, Yellow Springs
 E. E. Jacobs, President, Ashland College, Ashland
 A. O. Jones, Principal, Woodward High School, Cincinnati
 H. W. Jones, Assistant to President, Hiram College, Hiram
 E. S. Kerr, Asst. Supt., McKinley High School, Canton, Ohio
 C. H. Lake, First Asst. Supt. of Schools, Cleveland
 F. C. Landsittel, Professor of Education, Ohio State University, Columbus
 Morna R. Larrick, State Dept. of Education, Columbus
 J. N. Lewis, Principal, Oakwood High School, Dayton
 J. J. Lowden, Graduate Assistant, Ohio State University, Columbus
 J. G. Lowery, Dean, Dept. Education, Muskingum College, New Concord
 E. D. Lyon, Principal, Withrow High School, Cincinnati
 Frank D. McElroy, Ohio, State University, Columbus
 L. W. MacKinnon, Dean of Administration, University of Toledo, Toledo
 E. F. Maher, Principal, St. John's High School, Toledo
 I. F. Matteson, Supt. of Schools, Findlay
 Otto Mees, President, Capital University, Columbus
 H. E. Milligan, Supt. of Schools, Milford
 E. E. Morley, Principal, Heights High School, Cleveland Heights
 Rev. R. B. Navin, Dean, Sisters' College, Cleveland
 D. O'Connell, Dean, St. Xavier College, Cincinnati
 R. W. Ogan, Dept. School Administration, Ohio State University, Columbus
 Rev. B. P. O'Reilly, President, University of Dayton, Dayton
 D. W. Pearce, Head Dept. Education and Psychology, Kent State College, Kent
 P. H. Powers, Principal, East Technical High School, Cleveland
 A. H. Savenye, Financial Secretary, Marietta College, Marietta
 C. W. Savage, Professor Physical Education, Oberlin College, Oberlin
 B. T. Schad, Professor, Civil Engineering, University of Dayton, Dayton
 C. G. Shatzer, Dean, Wittenberg College, Springfield
 F. L. Simmons, Asst. Principal, Collinwood High School, Cleveland
 Sister M. Agnes, Dean, Notre Dame College, South Euclid
 Sister Mary Amedia, Chemistry Teacher, Notre Dame High School, Cleveland
 Sister M. Cyprian, Principal, Holy Redeemer High School, Portsmouth

Sister Marie Emilie, English Teacher, Summit County Day School, Cincinnati
 Mother Mary Everista, President, Notre Dame College, Cleveland
 Sister Florentine, Principal, St. Mary High School, Portsmouth
 Sister M. Letitia, Principal, Ursuline Academy, Cleveland
 Sister Mary Louise, Instructor, Sisters College, Cleveland
 Sister Mary Bernard McConn, Principal, Ursuline High School, Youngstown
 Sister Catherine McMahon, Professor of Modern Languages, Ursuline College, Cleveland
 Sister Michaela Home Economics Teacher, Immaculate Academy, Canton
 Sister M. Beatrice Mooney, Head English Dept. Ursuline College, Cleveland
 Sister M. Priscilla, Principal, Notre Dame High School, Cleveland
 Sister Marie St. Eleanor, History Teacher, Mount Notre Dame, Reading
 Sister M. Theabald, Principal, St. Joseph Academy, Bedford
 Sister Elizabeth Seton, Principal, Academy of Mt. St. Joseph, Mt. St. Joseph
 Sister M. Veronica, Principal, Villa Angela Academy, Cleveland
 Sister Mary Zoe, Dean, College of Mt. St. Joseph, Mt. St. Joseph
 Vivian B. Small, President, Lake Erie College, Painesville,
 Helen M. Smith, Dean of College for Women, Western Reserve University, Cleveland
 W. E. Smyser, Dean, Ohio Wesleyan University, Delaware
 A. I. Spanton, Dean, Liberal Arts College, University of Akron, Akron
 A. B. Storms, President, Baldwin Wallace College, Berea
 B. L. Stradley, University Examiner, Ohio State University, Columbus
 F. L. Talbert, Director of Admissions, University of Cincinnati, Cincinnati
 W. D. Trautman, Dean, Adelbert College, Western Reserve University, Cleveland
 R. E. Tulloss, President, Wittenberg College, Springfield
 A. H. Upham, President, Miami University, Oxford
 Rev. J. A. Weiand, Principal, St. Xavier High School, Cincinnati
 W. R. Westhafer, Dean, College of Wooster, Wooster
 K. E. Whinnery, Principal, High School, Sandusky
 W. T. Wickham, Supt. Orange School, Chagrin Falls
 H. B. Williams, President, State Normal College, Bowling Green
 T. H. Winters, Assistant Director, State Dept. of Education, Columbus
 Rev. L. A. Yeske, President, Cathedral Latin School, Cleveland
 P. J. Zimmers, Professor of Education, Case School, Cleveland
 G. F. Zook, President, University of Akron, Akron (87)

OKLAHOMA

E. E. Brown, President, Southwestern State Teachers College, Weatherford
 E. S. Briggs, President, Southeastern State Teachers College, Durant
 W. T. Doyel, Registrar, Central Teachers College, Edmond
 J. D. Finlayson, Chancellor, University of Tulsa, Tulsa
 M. R. Floyd, President, Northeastern Oklahoma Junior College, Miami
 Will French, Associate Supt. of Schools, Tulsa
 Roy Gittinger, Dean of Administration, University of Oklahoma, Norman
 M. P. Hammond, President, Northeastern State Teachers College, Tahlequah
 J. Andrew Holley, Chief High School Inspector, State Dept. of Education, Oklahoma City
 Galen Jones, Asst. Supt. of Schools, Tulsa
 O. C. Lucy, Supt. of Schools, Pawnee
 I. N. McCash, President, Phillips University, Enid
 J. R. Mitchell, President, Central State Teachers College, Edmond
 P. C. Norvell, Principal, High School, Bartlesville
 Merle Prunty, Supt. of Schools, Tulsa
 A. F. Reiter, Dean, Phillips University, Enid
 R. R. Robinson, President, University Prep. School and Junior College, Tonkawa
 L. M. Speaker, Principal, Central High School, Muskogee
 Howard Taylor, Dean, Oklahoma College for Women, Chickasha
 G. C. Wells, Secretary, State Board of Education, Oklahoma City
 E. W. Woods, Principal, Booker Washington School, Tulsa
 (21)

SOUTH DAKOTA

R. C. Agne, President, Huron College, Huron
 H. B. Ansted, President, Wessington Springs Junior College, Wessington Springs
 G. L. Brown, Dean of Faculty, South Dakota State College, Brookings
 O. D. Dunbar, Principal, High School, Huron
 W. I. Early, Principal, High School, Sioux Falls
 L. M. Fort, Principal, High School, Mitchell
 H. W. Frankenfeld, Registrar, University of South Dakota, Vermillion
 E. C. Higbie, President, Eastern State Teachers College, Madison
 R. W. Kraushaar, High School Supervisor, State Dept. Public Instruction, Pierre
 D. D. Miller, Principal, High School, Watertown
 G. W. Nash, President, Yankton College, Yankton
 O. J. H. Preus, President, Augustana College, Sioux Falls
 C. L. Rich, Dean, Liberal Arts College, Dakota Wesleyan University, Mitchell
 Sister Rose Catherine, Principal, Cathedral School, Sioux Falls
 E. S. Sparks, Dean, College of Arts and Science, University of South Dakota, Vermillion
 (15)

WEST VIRGINIA

H. L. Ash, Principal, Victory High School, Clarksburg

- L. C. Bonar, Principal, Warwood High School, Wheeling
 R. V. Browning, Secretary and Business Manager, High School, Logan
 W. E. Buckey, Principal, High School, Fairmont
 E. E. Church, Principal, High School, Martinsburg
 J. W. Davis, President, West Virginia State College, Institute
 I. E. Ewing, Principal, High School, Wheeling
 Cloyd Goodnight, President, Bethany College, Bethany
 Hal Groves, Principal, Nicholas County High School, Summersville
 C. W. Jackson, Principal, Beaver High School, Bluefield
 P. E. King, Principal, Triadelphia Dist. High School, Oak Park, Wheeling
 E. G. Kuhn, Principal, High School, Farmington
 R. E. Langfitt, Supervisor of High Schools, State Dept. of Education, Charleston
 Orie McConkey, Principal, Washington Irving High School, Clarksburg
 F. W. McGuire, Principal, High School, Wellsburg
 C. T. Neff, Jr., Secy., Board of Governors, West Virginia University, Morgantown
 D. H. Perdue, Inspector High Schools, State Dept. of Education, Charleston
 Gilbert Reed, Principal, High School, Burnsville
 H. D. Rohr, Principal, High School, Weston
 Joseph Rosier, President, State Normal School, Fairmont
 J. B. Shouse, Dean, Teachers College, Marshall College, Huntington
 C. M. Stalnaker, Principal, High School, Logan
 F. W. Stemple, Professor of Education, West Virginia University, Morgantown
 J. R. Turner, President, West Virginia University, Morgantown
 H. E. Wark, President, West Virginia Wesleyan College, Buckhannon
 W. C. Whaley, Principal, High School, Fairmont
 (26)

WISCONSIN

- F. C. Baker, President, State Teachers College, Milwaukee
 G. J. Balzer, Principal, Washington High School, Milwaukee
 Lucia R. Briggs, President, Milwaukee-Downer College, Milwaukee
 T. G. Brown, Vice-Principal, Boys' Technical High School, Milwaukee
 H. F. Connors, Principal, High School, Hurley
 J. M. G. Darms, President, Mission House Academy, Plymouth
 Silas Evans, President, Ripon College, Ripon
 S. D. Fell, Principal, High School, Oshkosh
 Rev. J. A. Finnegan, Principal, Marquette University High School, Milwaukee
 E. A. Fitzpatrick, Chancellor, Mount Mary College, Milwaukee
 J. T. Giles, High School Supervisor, State Dept. Public Instruction, Madison
 A. D. S. Gillett, President, State Teachers College, Superior
 W. J. Grace, Dean, College Liberal Arts, Marquette University, Milwaukee

- J. C. Graham, Dean, Ripon College, Ripon
 Oscar Granger, Principal, Shorewood High School, Milwaukee
 H. L. Henderson, Research Asst. to Governor Kohler, Madison
 F. S. Hyer, President, State Teachers College, Whitewater
 T. J. Jones, Supt. of Schools, West Allis
 Thos. Lloyd-Jones, High School Visitor, University of Wisconsin, Madison
 B. A. Kennedy, Principal, High School, Prairie du Chien
 J. C. Lazenby, Director Secondary Education, State Teachers College, Milwaukee
 Irving Maurer, President, Beloit College, Beloit
 D. W. Miller, Principal, Horlick High School, Racine
 B. E. Nelson, President, The Stout Institute, Menominee
 O. F. Nixon, Principal, East High School, Green Bay
 F. S. Randle, Principal, East High School, Madison
 Anna A. Raymond, Principal, Milwaukee-Downer Seminary, Milwaukee
 Sister Mary Bernardine, Principal, McDonell High School, Chippewa Falls
 Sister Mary Frances, Registrar, Notre Dame Convent, Milwaukee
 Sister Mary Josine, Supervisor, Notre Dame Convent, Milwaukee
 Sister Mary Lioba, Dean, Mount Mary College, Milwaukee
 Sister M. Maurilia, Teacher, St. Rose Convent, La Crosse
 Sister Mary Rose, Principal, St. Rose High School, La Crosse
 Sister Wilberta, Registrar, Mount Mary College, Milwaukee
 Sister Mary Xavier, Principal, St. Clara Academy, Sinsinawa
 C. W. Smith, Dean, State Teachers College, Superior
 G. M. Snodgrass, President, La Crosse Teachers College, La Crosse
 O. P. Sullivan, Principal, Campion High School, Prairie du Chien, Wisconsin
 Raymond G. Weihe, Vice-Principal, West Division High School, Milwaukee
 F. W. Werner, Principal, North Division High School, Milwaukee
 M. H. Willing, Professor of Education, University of Wisconsin, Madison
 W. H. Williams, Vice-President and Registrar, State Teachers College, Platteville
 H. M. Wriston, President, Lawrence College, Appleton
 (43)

WYOMING

- L. R. Kilzer, Professor of Education, University of Wyoming, Laramie
 C. R. Maxwell, Dean, College of Education, University of Wyoming, Laramie
 P. T. Miller, Dean, College of Liberal Arts, University of Wyoming, Laramie
 N. D. Morgan, State Commissioner of Education, Cheyenne
 (44)

OTHER STATES

- W. D. Agnew, President, Woman's College of Alabama, Montgomery
- J. Franklin Brown, Editor, The Macmillan Company, New York
- O. W. Caldwell, Director, Institute School Experimentation, Columbia University, New York
- R. N. Corwin, Director of Admissions, Yale University, New Haven, Conn.
- D. P. Cottrell, Professor of Education, Columbia University, New York
- M. G. Fuller, President, Dickinson College, Carlisle, Virginia
- R. C. Horn, Acting President, Muhlenberg College, Allentown, Pa.
- A. W. Hurd, Research Associate, Institute School Experimentation, Columbia University, New York
- C. W. Irwin, Executive-Secretary, Association of Seventh-Day Adventists Colleges and Secondary Schools, Washington, D. C.
- Adam L. Jones, Director of Admissions, Columbia University, New York
- G. N. Kefauver, Professor of Secondary Education, Columbia University, New York.
- J. R. McCain, President, Agnes Scott College, Decatur, Georgia
- C. R. Mann, Director, American Council on Education, Washington, D. C.
- R. L. Marquis, President, North Texas State Teachers College, Denton
- Mother Mary Brigid, Loretto Mother House, Loretto, Kentucky
- Mother M. Olivette, Superior General, Loretto Normal School, Nerino, Kentucky
- F. L. Proffitt, Treasurer, Maryville College, Maryville, Tennessee
- D. A. Robertson, Assistant Director, American Council on Education, Washington, D. C.
- H. T. Smith, Business Manager, Parsons College, Fairfield, Virginia
- G. E. Snavely, President, Birmingham-Southern College, Birmingham, Alabama
- H. N. Snyder, President, Wofford College, Spartanburg, South Carolina
- F. E. Stockwell, General Director, College Dept. Presbyterian Board of Christian Education, Philadelphia, Pennsylvania
- J. H. Wagner, Chief of Alaska Division, U. S. Office of Education, Seattle, Washington
- J. H. White, Professor Psychology, University of Pittsburgh, Pittsburgh
- M. Whitman, Endowment Secretary, Catawba College, Salisbury, North Carolina
- A. D. Wright, Professor of Education, Dartmouth College, Hanover, New Hampshire

(26)

Grand Total—842